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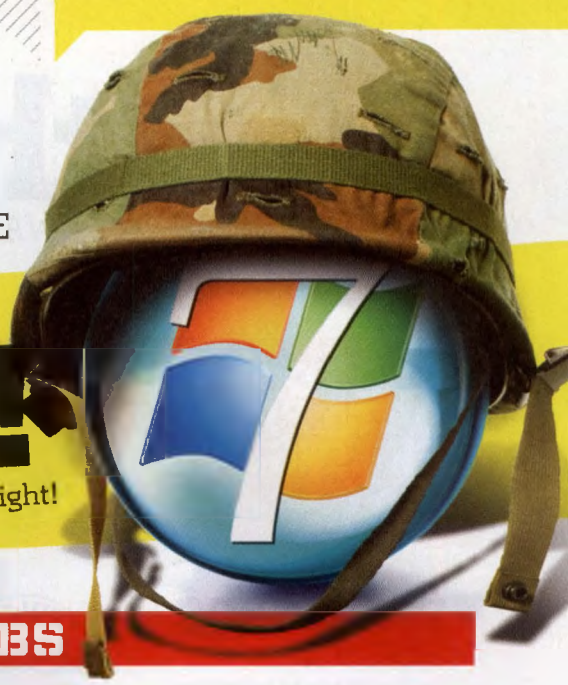

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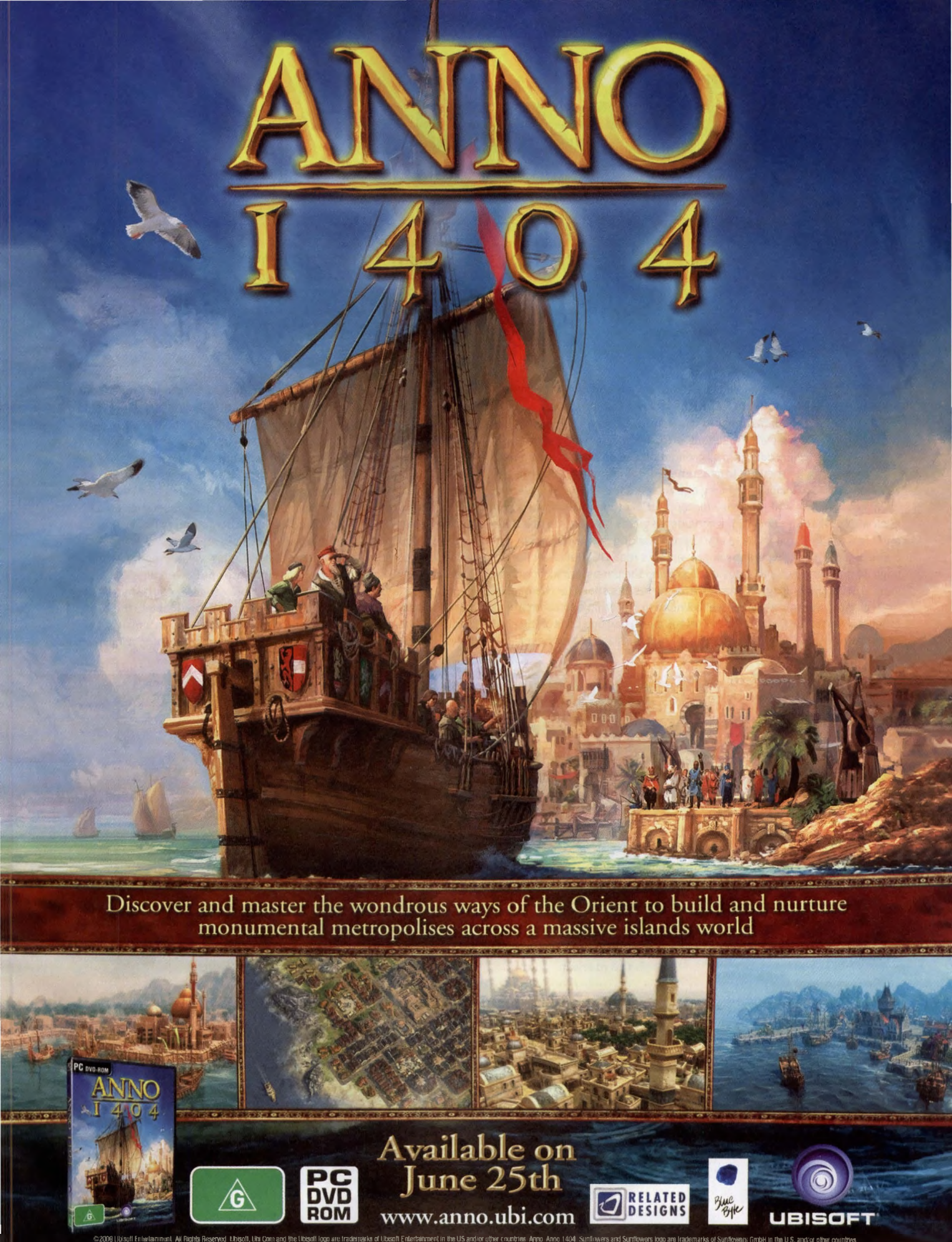

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06 editorial

TONY SARNO

VISTA IS GONE, EVEN WITHIN MICROSOFT, AND RC 1 IS CONSIDERED GOOD ENOUGH FOR REAL WORK

Recently I was a judge at a Microsoft competition for students. Called the Imagine Cup, it was won by a team from the University of Canberra, which proposed a clever mechanism for assessing the green rating of products in all production and delivery stages before they get to consumers. I was impressed, but what also caught my eye was that the Microsoft staff at the event ran Windows 7 RC 1 on their laptops. So, in other words, Vista is gone even within Microsoft and RC 1 is considered good enough to do real work on. This was the signal for us to start benchmarking the new OS against its predecessors, to see where the improvements really lie. Our cover story on page 74 pits Windows 7 RC1 against Vista and the persistent XP across a variety of common usage scenarios, and the results speak for themselves.

Microsoft, though, would be well advised to start thinking about its other stalwarts, like Outlook. I use Outlook every day and constantly chafe at its restrictions. These include limits on .pst file sizes (it was never designed to handle massive multi-gigabyte files), restricted functionality in the web-access version, and the structural clumsiness that prevents me from quickly and easily following an email conversation thread. In order to make it more usable, I've added third-party utilities, such as Xobni, a fantastic plug-in that adds email threads and social networking features. But it's a patch-up job. On the other hand, the future of email has been defined by the usual suspects: Google. Web-based Gmail is already compelling for personal use but Google's Wave next-generation email seems perfect for the workplace as well as home, and will make Outlook seem even more obsolete. Shown to developers last month, Wave effectively combines email, instant messaging, wikis, drop-box-style storage and social networking and more into one universal communications interface through your browser. Microsoft should take note that the future of email is the bulletin board brought into the 21st century, not a replica of snail mail, which is what standard email is.

tsarno@acpmagazines.com.au

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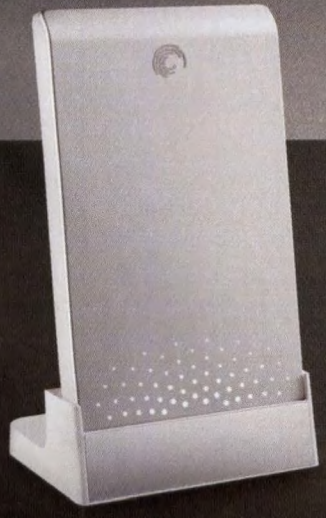

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www.skyecandy.com

KLINGON ANTIVIRUS
We're scratching our heads over this one: a respected antivirus vendor has launched Sophos Klingon Anti-virus, which promises to scan for virus, spyware, and adware for members of the Klingon empire. It is no joke either: it was released April 1, really does scan your system for malware, and can be viewed in full Klingon interface mode.
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If you like Google Docs but still prefer to work in a real desktop app like Word or Excel, you'll love OffiSync, which allows you to open, save and browse Google Docs right through Microsoft Office.
http://offisync.com/

Hyperspeed mobile broadband

Sierra's Turbo 21 modem makes Telstra's Next G the world's fastest mobile broadband network.

It's a barely noticed milestone among all the fuss about the national broadband network and Sol Trujillo's departure from Telstra, but Australia finally has a wireless broadband service with enough speed to let you do serious, office-style work while on the road. By that, we mean downloading and uploading massive files, participating in high-res video conferences, and surfing the net as fast as on your ADSL2+ connection. We've been testing Telstra's upgraded version of its Next G network, accessible through the Sierra Wireless's Turbo 21 USB modem and are pretty enraptured. The Turbo 21 modem delivers a theoretical maximum speed of 21Mbit/s by employing more sophisticated modulation techniques than previous modems. Obviously you get the theoretical speed if you live in a treehouse on the transmission tower and are the only user in the cell, but in real life we've been averaging between 5Mbit/s and 8Mbit/s, which makes it humungously faster than the Next G you get with 7.2Mbit/s and 3.6Mbit/s modems, and faster than competitor networks. The modem's drivers work only on Windows, so Mac users miss out for now. The Next G 21Mbit/s service uses the standard Next G plans but the Sierra Turbo 21 modem will cost you $399 if bought separately. Telstra is planning to upgrade the Next G network in the near future.

HOT PRODUCT

Kodak Zx1

A pocket-sized 1,280 x 720 HD camcorder!

A flash memory-based camcorder can be made surprisingly small because there's no moving parts for tape. Kodak's new pocket-sized HD Camcorder is smaller than most mobile phones, yet it shoots 1,280 x 720 high-definition video at either 30 or 60 frames per second. We ran the results up on a 50in plasma and were amazed with the quality of video such a tiny camera can generate. Videos can be recorded directly to an SD/SDHC Card of up to 32GB capacity, which gives you 10 hours of HD video. Housed in a weather-resistant body, the Zx1 has a simple-to-use interface that boasts simple, one-handed access to all menus and controls making playback on the 2-inch LCD screen a breeze. An HDMI cable allows easy connection to a PC, where the Zx1's in-built editing software allows you to edit, trim, splice and enhance videos or add pictures and music for direct YouTube uploads. Rechargeable AA Ni-MH batteries and a charger complete the package. The Zx1 comes in black, red, pink, blue or yellow, and costs $299.

Christopher Zammit

TOP 10
...DEADLY TECHNOLOGIES

Computers can be dangerous — as this recent gruesome history of explosions and accidents shows.

1 **INCINERATED**
Exploding laptop stuns and incinerates programmer in Velachery, India. April 2009.

2 **SPLATTERED**
Arkansas woman jumps from second floor to escape burning Compaq. January 2008.

3 **IGNITED**
South Korean reporter's LG laptop ignites at conference, film now on You Tube. January 2008.

4 **DETONATED**
Motorola phone explodes in shirt pocket of Chinese welder, killing him. June 2007.

5 **HEATED**
G4 PowerBook catches fire under bed. Happy owner gets free MacBook Pro. October 2007.

6 **DISTRACTED**
California man using laptop while driving is killed in head-on with Hummer. February 2007.

7 **TORCHED**
Dell laptop catches fire and burns down family home in South Venice, Florida. August 2006.

8 **AIR BURST**
PC ignites a cloud of insecticide sprayed in house in Germany. Owner lives. May 2005.

9 **BLISTERED**
British scientist gets penile and scrotal blisters from his Dell Latitude "laptop". November 2002.

10 **COLLAPSED**
Hydrogen gas build-up in Sacramento UPS/battery room destroys building. March 2001.

EYE ON ION
Nvidia's new platform is set to increase power and performance at the tiny end of town.

MORE POWER!

NVIDIA's Ion platform and its competitors promise to deliver 3D games and HD to netbooks.

CPU and chipset makers are planning to fix the problem of graphically-underpowered netbooks. Leading the way is NVIDIA with its Ion platform — which incorporates its own GeForce 9400M GPU in combination with Chipzilla's Atom processor in a Pico-ITX form-factor. This has already started appearing in desktops and is set to make it into netbooks in the next few months. The Ion architecture, which is capable of handling modern 3D games as well as decoding 1080p HD video (something Intel's own 945G integrated graphics struggles with), is set to be used in a new netbook from Lenovo, with other manufacturers expected to follow suit.

One of the more surprising rumours is that Apple is interested in Ion and received one of the first samples of the platform. What system this will make it into isn't confirmed, but the most likely candidates are an updated Apple TV, a Mac mini or even some form of netbook.

Meanwhile, Intel's Atom has quickly become synonymous with netbooks, and the renewed push from the Ion could help it to appear in even more machines. This will be buoyed in the third quarter of this year, when the second iteration of the CPU (codenamed Pineview) is set for release. Pineview incorporates its own GPU core and should match NVIDIA's power consumption, if not quite its raw processing power.

Intel isn't the only manufacturer to build its CPUs into netbooks though, with the VIA Technology C7 CPU providing the power in the HP Mini-Note 2133. Its latest processor, the Nano U2250 (operating at 1.3GHz and combined with Chrome9 HC3 integrated graphics), has found its way into the Samsung NC20, the larger-screened follow-up to the well-received NC10 netbook. Intriguingly, NVIDIA has said that it's planning to update the Ion platform to support the VIA Nano by the end of the year.

BEWARE OF CLICKJACKERS

Web site spoofing scares experts, but IE8 claims a fix.

Cybersecurity experts are becoming increasingly concerned about clickjacking, a technique that allows hackers to display a fake web page and overlay it with a legitimate site in a transparent layer, thereby fooling visitors into taking actions that they didn't intend. Security researchers Robert Hansen and Jeremiah Grossman found that the exploit could be used to enable your webcam and microphone through a Flash vulnerability, and in February Twitter fell victim to clickjacking, when clicking a button labelled 'Don't click' caused users to unwittingly send off tweets with links to the attack page. No harm was done that time, but it was proof that the technique could work even on a high-profile site. So, it's a good time for Microsoft to announce that it's bundled a 'clickjacking defence' in IE8, then. But this defence is essentially just support for a new header (X-Frame-Options) that allows web developers to prevent their page from being displayed in a frame (*www.tinyurl.com/cdnpuq*). A more secure alternative to Internet Explorer might be the Opera browser (*www.opera.com*), which makes it easy to disable iframes. The best solution however is to use Firefox and install the NoScript extension (*www.noscript.net*). Other browsers will surely introduce similar technology, but it's the safest best for now.

TRIBAL COUNCIL...

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What's the most you'd pay for a netbook?

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$400 **25%** $600 **43%** $800+ **32%**

APCMAG.COM ASKED
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YOU REPLIED

3% **89%** **5%**

HEAD2HEAD

We pit the tried and trusted Google against Wolfram Alpha and Twitter Search to see which search engine is really the best.

	GOOGLE	WOLFRAM ALPHA	TWITTER SEARCH
What it does	Serves you a list of links that may or may not lead you to the answer.	Tries to compute the answer from available facts.	Tells you if and how your search topic is being discussed in tweets.
How it does it	Searches billions of web pages and extracts relevance artificially with various algorithms.	Searches library of reference works including Wikipedia, Britannica, US Census to generate factual answers.	Searches the billions of 140-character updates generated by Twitters (soon to search URLs in Tweets).
When to use it	When you're looking for a specific source or a list of sources of information and are happy to research the final answer yourself.	When you just want an answer or solution to a question and don't want to choose from thousands of search results.	When you want to find information or trends that are highly topical and being discussed right now around the world.
Question: "What's Europa's distance from earth?"	First result: not the answer, but a student who wants to know the distance to Europa!	Instantly calculates distance, and more, the distance right now (721.5 million km).	The only "Europa" being discussed on Twitter right now is next year's EUFA Europa soccer league.
Limitations	Gives you an answer or solution only if someone else has already published it.	Works best with scientific or factual-based information; useless with everything else.	What people tweet about is not necessarily the most informative or useful info.
Verdict	Still unchallenged as the main door to world's information.	Perfect for when you want quick factual info of the kind you find in encyclopaedias.	Brilliant for finding out what's holding the interest of people right now.

DICTATOR CREATES CHEAPEST MOBILE

Venezuela's Hugo Chavez thumbs his nose at expensive Western smartphones.

Venezuela's president Hugo Chavez felt so strongly about his country's dependence on Nokia and other foreign handset makers that he ordered a state-owned company to produce a local, cheap mobile phone using Chinese-made parts. The end result is a US$13.95 mobile with an MP3 player, WAP internet access, FM radio and camera. It's no iPhone, but it works and its first shipment of 5,000 has sold out. In creating the world's cheapest smartphone, Chavez also showed his disdain for slick Western product branding, choosing the name "Vergatario" for his mobile , which is Venezuelan for "Big Penis". While many Venezuelans consider the name vulgar, others enjoyed Chavez's sense of humour. Still, Chavez's phone shows what's really possible if a government wants to make a critical piece of technology readily available.

NUMBER CRUNCHING

41

THE NUMBER OF LANGUAGES GOOGLE'S GMAIL CAN NOW TRANSLATE BETWEEN.

1,000

The years it will take for Opium Magazine's cover to show itself — it is printed in a new type of ink that reveals itself slowly. Very slowly.

25,000

THE NUMBER OF PCs PER WEEK BEING ADDED TO A BOTNET IN PIRATED COPIES OF WINDOWS 7 RC (WHICH IS A FREE DOWNLOAD FROM MICROSOFT ANYWAY).

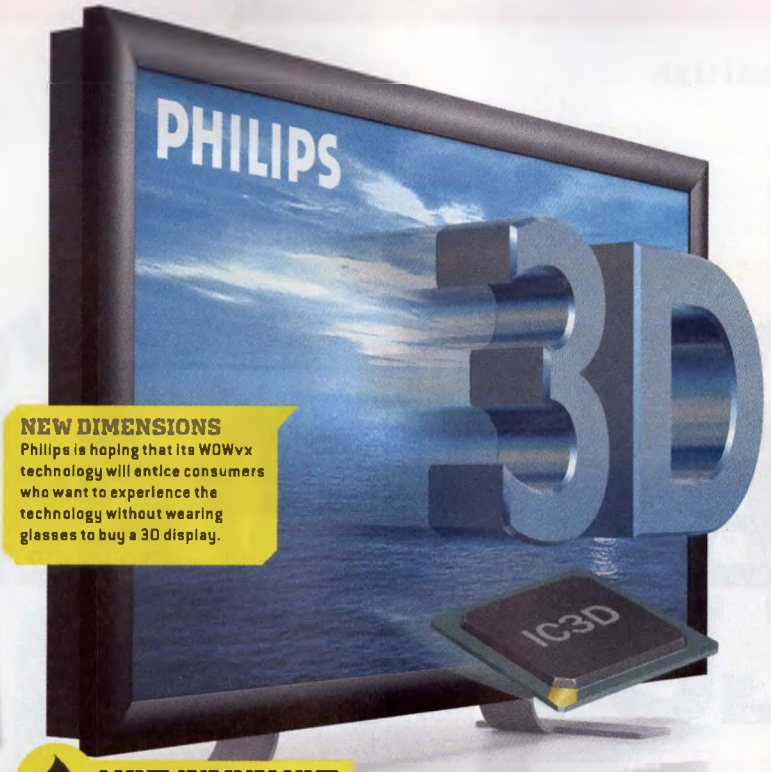
THE (A)PC REVOLUTION
JUL / 1986

SPERRY'S NEW PC

Sperry is the latest contender to join the AT compatible race with a new machine dubbed the IT. Almost indistinguishable from the IBM beast, Sperry has attempted to go for performance with a dash of individuality. The basic Sperry PC comprises a single floppy with 512KB RAM and retails for $6,500. A monochrome monitor is $443 and a display controller for it is $345. An optional 44MB hard disk system costs $9,650. With Asian AT compatibles now available for around $5,000, one has to wonder if people are going to be prepared to pay over $15,000 for much the same thing with a Sperry label on it.

NEW CHIP TO BOOST ST SALES

Atari's ST is about to get another boost with the launch of the famous 'blit' chip and a matching sound chip, which we all hope, will make the ST directly comparable to the Amiga. . . The blit chip is a kind of 'PA' to the main processor, handling the fast data shifts necessary to produce animated graphics, without requiring the processor to work out which dots are red, green or blue etc.



NEW DIMENSIONS
Philips is hoping that its WOWvx technology will entice consumers who want to experience the technology without wearing glasses to buy a 3D display.

HOT PRODUCT

The 3DTV format war

Move over HD: 3D technology is closer to entering our homes than ever before.

More manufacturers than ever are trying to bring 3D into the home, with many earmarking 2010 as the year the technology will be ready for the average consumer to purchase. The home-entertainment industry is on the cusp of a new format war, with the main fight being between the two ways to view 3D.

If you have to don a pair of specs to view three-dimensional images, then what you are looking at is 'stereoscopic' 3D. There are currently a number of companies that are offering this version of the technology, with this year's CES (Consumer Electronics Show) in Las Vegas somewhat overrun with 3D-enabled sets.

Of note was the 3D Full HD (3D FHD) TV previewed by Panasonic — a 103in display that churns out eye-popping content viewed through special glasses with active shutters that work in sync with the TV. Samsung also unveiled its contender for the 3D crown, a TV that automatically converts 2D footage to near-3D. An obvious drawback to both of these sets, though, is that you have to wear 'Joe 90' specs to view the content. Looking silly puts a bit of a dampener on the cool factor of having a 3D TV in the first place.

Luckily, there are those who are busy prepping 'autostereoscopic' (sans glasses) 3D TVs for the mass market. To view 3D content on these sets, you'll need to be at a certain angle and have a certain amount of distance between the television and yourself. LG's True3D autostereo TV is currently doing the rounds at numerous AV tradeshows, while Philips has recently introduced WOWvx (which stands for 'wow' visual experience) 2D-plus-Depth technology. It may not be true 3D, but it does give footage a 3D feel and is likely to be the first of the two to reach production.

With cinemas set to be overrun with 3D films this year there's a definite change afoot. The potential is there, and now the technology is catching up fast. It's all a far cry from the red-and-blue glasses of old. apc

Mustknow
Essential Knowledge

VIRUSES INFECT MODEM/ROUTERS

It's not just your home PC that you need to worry about any more — home modem/routers can now be directly infected by viruses, which turn them into botnets. Routers make ideal infection targets because apart from a little bit of slowness on your connection, there's no change at all to your PC, and no changes will be detected by your PC antivirus software. At this stage, switching the router on and off is enough to clear the virus, but it may be immediately reinfected if you don't take preventative measures. Most importantly, change the default admin username/password from "admin/admin" to something harder to guess. Secondly, make sure your router is running the very latest firmware available from the manufacturer's web site. The malware contains the shellcode for over 30 different Linksys models, 10 Netgear models, and a variety of other cable and DSL modems (15 different shellcodes). It has also been observed in Australia on a Netcomm NB5.

Topsite
URL of the month

SIERRA GAMES LIVE AGAIN!

Were you an avid player of Sierra adventure games? Leisure Suit Larry, King's Quest, Space Quest, Police Quest, Quest for Glory, and so on? Now you can play them directly in your web browser thanks to programmer Martin Kool. The best part — you can now play them in optional multiplayer mode, letting you see other players in the same game and talk to them.

www.sarien.net

MICROSOFT'S SMB SERVER SOLUTION

Got 15 users or less? Running a PC as a server? Microsoft wants your business, reports **James Bannan**.

Back in April, Microsoft announced the release of a new server product for the small business market: Windows Server Foundation. Built on Server 2008, this new product offering is aimed at the 'micro-business' end of SMBs. The concept of Server Foundation was originally inspired by Microsoft's research into IT affordability in fast-growing countries like China, Brazil and India. "We saw a disparity between what people could afford to pay for IT systems and what they were being charged," said Iain MacDonald, a Director in the Windows Server Group, "and we felt that there was room for a reduced-functionality version of Windows Server which came in at a lower price point." The idea was pitched to Microsoft CEO Steve Ballmer, who suggested the product be offered globally, rather than limited to just fast-growing markets.

The 'reduced-functionality' component of Server Foundation is a 15-user limit, no Hyper-V virtualisation and single domain controller ADDS (ie. no multiple DCs). The product will only be available on an OEM licence from Microsoft partners and resellers in order to keep the price down. Australian pricing has yet to be confirmed, but Server Foundation-based solutions are expected to ship for around the sub-US$1,000 mark (approximately $1,400).

While the 15-user limit may seem overly restrictive and counter-intuitive, it's important to realise that the pitch for Server Foundation is businesses whose current IT needs are being met by a PC running as a de facto server. Windows client software has a 10-user connection limit, so it's actually something of an improvement. For businesses that are either right on the cusp of 15 connections or over, Server Foundation isn't a viable option, so there's the choices of Essential Business Server, Small Business Server or the full Windows Server products. In its research, Microsoft found that the value offered by these higher-end products didn't penetrate the 15-users-and-below section of the market, where the requirements for business-supporting technologies are quite different. The low price point is seen as a critical factor in the future success of Server Foundation. "We realised that there's a lot we can do to help businesses use the same sort of technology, which larger businesses have access to," said Bill Hilf, Microsoft's Director of Platform Strategy, "but first we had to get two things right: the price, and reduced complexity. It was also very important to offer this product only through our OEM partners so that there was a single, uncomplicated transaction point."

Microsoft is essentially leveraging off the blurring boundaries between increasingly powerful and affordable consumer hardware and traditional, more expensive enterprise-class systems. Desktops with a multi-core CPU, 4GB RAM and 1TB of RAID-supported storage are well within most business's price range, and such systems are more than capable of serving as an entry-level server. The operating system licence is structured to constitute far less of the total system cost than traditional server builds: approximately US$150.

Familiarity with the hardware platform and operating system are also seen as critical factors. With the unified structure between Microsoft's client and server operating systems in terms of the OS kernel level and the driver model, Microsoft are hoping to be able to convince customers of the ease in moving to using a server OS with a familiar UI to the client OS, while also retaining full support for classic consumer hardware: printers, scanners, digital cameras and so on. It's important to keep in mind the nature of the market that Microsoft is targeting. "In the Asia Pacific region there are tens of millions of small businesses," said Hilf, "and while the vast majority of them have computers, server penetration is typically around 2-3%." Server Foundation is aimed at businesses that have little or no concept of what a server does, or even of client/server computing. Microsoft is hoping to convince small business owners of the value of Server Foundation through 'new' concepts of system and data security, stability, increased uptime and data protection.

GOT MICRO?
If you're running a micro-business at the small end of town, Microsoft may have the solution for you.

> THE LOW PRICE POINT IS SEEN AS A CRITICAL FACTOR IN THE SUCCESS OF WSF

WILL IT WORK?

There's no doubt that Microsoft is plugging a gap in its server product suite. If you're a business with a couple of PCs, four staff and an ADSL connection then Small Business Server is clearly overkill. Yet relying on a client OS does have its risks. As much as Microsoft will talk up the stability, security and reliability of the Windows client OS, it's not designed for 24/7 uptime: business workflows are definitely better supported by a server OS.

Cynics will suggest that Microsoft is simply looking to squeeze more revenue out of the business market, but the proposed OEM cost of Server Foundation is directly comparable with the OEM cost of Vista Home Premium and is actually a bit cheaper than Vista Business (and significantly cheaper than other OEM Windows Server products).

One of the critical factors to the success of Server Foundation is Microsoft's relationship with partners, OEMs and resellers, as the customer relationship is with these entities and not directly with Microsoft. The ability for partners to be able to offer customers a complete business solution for less than US$1,000 is quite compelling for them, but they need to be able to communicate the benefits to customers effectively. The micro-business end of the small business market is exceptionally diverse and spread out, especially in Australia:

"There are approximately 1.9 million small businesses which represent around 95% of businesses in Australia with around 3.6 million employees," says Martin Gregory, Director of Server and Tools for Microsoft Australia: "Additionally, approximately 35% of those businesses operate in regional Australia and 70% operate from home." Often with little or no in-house IT expertise or up-to-date knowledge of developments in the IT industry, it's certainly a challenge for Microsoft and its partners to get the message out there.

Another significant importance is that of ongoing support: any business solution needs to be effectively supported in the long term, and the smaller the business the more important this becomes. Again, Microsoft's relationship with resellers will come strongly into play, as this will dictate how effectively customers are supported. There's plenty of potential for vendors and customers alike, but the model has to work properly from the outset. Compared with larger enterprises, small business owners generally don't have sufficient resources to devote to getting a time-consuming new system up and running, so the onus is definitely on Microsoft to deliver to both customers and partners.

The future of Server Foundation (assuming all goes well with product adoption) is an interesting one. Rather than push expanding businesses down a path of upgrading their server licensing, Microsoft is hoping to use in-place systems as a platform to deliver the services component of their "software plus services" approach to business IT. The idea is that additional cloud-based services will enable businesses to meet their expansion needs without having to undergo expensive upgrades of on-site infrastructure. At the moment it's unclear what form this will take (perhaps a division of Windows Live specifically targeting small business), but regardless of how cloud services will be delivered, there's no doubt that, from Microsoft's perspective, a stable and homogenous server OS platform will be a good environment to deliver it. APC

14 epinions
HAVE YOUR SAY

epinions@acpmagazines.com.au

Come on, have your say! We want to hear what you think. Add to these discussions or email your views (in fewer than 250 words) to epinions@acpmagazines.com.au. All correspondence becomes the property of *APC* and is subject to editing. Letters must include writer's full name, street address, suburb, state and phone number to be considered for print publication and to be in the running for Letter of the Month prizes. Address and phone details will not be published.

THIS ISSUE'S WINNER

Letter of the month

Danny wins a TP-Link Wireless N Router and Adapter bundle worth over $200.

DUAL SIM'S A WINNER

Christopher Zammit's article on the first Dual Sim mobile phone to be locally distributed (*APC* May 2009, page 111) came as great news to me.

I carry two phones, a work phone on Telstra Next G and also my personal phone on Hutchison 3. It's a real pain carrying around two phones all the time. I'm sure other people who do this also would have been excited reading this article.

Anyways, when I contacted the distributor I found out the dual sim phones run as 2.5G.

So if you're with Telstra Next G, it will connect to Telstra's 2G network, so you won't get the Next G coverage.

It's a great idea having dual sim phones, but if they aren't going to run at 3G or 3.5G then I don't know what use they may be, apart from people who perhaps stick to the inner city?

Unfortunately, where I travel around the Riverina for work, Next G is a must.

The distributor did tell me that the 3G dual sim phones will come out, but they're about 6-12 months away.

Great article though and these phones will be of use to some people I'm sure.

Danny Connolly
Wagga Wagga, NSW

Ubuntu 9.04 (which is on next month's cover DVD, by the way) proves a hit with APC readers. And with fast boot times (to boot). Ahem.

JAUNTY'S A WINNER

It's only been about a month since 9.04 Ubuntu "Jaunty" was released, but I see this version as a winner. The boot time for my system decreased from around 57 seconds to 32 seconds, with a ready-to-use desktop interface.

This Ubuntu transition has been a breeze, considering that my old XP partition took up to two minutes to become a usable desktop, after all background processes (aka. Norton) had been loaded. The notification system in Jaunty is sleek but unobtrusive and this is a big thumbs up.

Joel Pickett
Sydney, NSW

STEAM'S A WINNER

I've been reading a fair bit of negative press regarding Valve's Steam content distribution system, so I just thought I would share my personal experience. About a month ago, I was fortunate enough to purchase the Orange Box (HL2 + Episodes 1 and 2, TF2, Portal) on special for US$10: an absolute bargain, considering I have recently seen it for AU$99 in stores. And better still, the download and installation didn't skip a beat, with no hassle about having to find discs to install or later play the games!

To those who are worried about not being able to return a game they are not happy with, I suggest taking advantage of the demos offered in order to avoid disappointment when buying a game.

However, the system is not without its flaws; I can see how the bandwidth consumed could be a problem. It would be nice to see other ISPs follow the lead of Internode and BigPond and offer the Steam content as unmetered, seeing as the number of publishers using it as a distribution platform is constantly increasing.

Here's hoping that its popularity amongst publishers continues, as I have only had positive experiences with Steam, most notably getting great games for a reasonable price.

Daniel Bergamin
Quakers Hill, NSW

BAD SOLDERING

Was reading 'Masterclass' in your May edition (page 100). In relation to soldering the ends of speaker cables (or any other kind of multistrand cable), be aware that this is done to ensure that each strand conducts evenly. It has nothing to do with 'corrosion'. Try soldering too close to the spaghetti and see what happens.

Thanks for the laugh!

Dave Palmer

FAMILY UNFRIENDLY

Your article 'SCAM-BAIT' was barely family-friendly in language or content. A games review uses "arse up" as a descriptive element. Let's try to maintain acceptable

iALTERNATIVE
Bucking the iPod trend can have its benefits, but it's not all plain sailing with other MP3 players either.

iPOD-FREE ZONE

Although the iPod is close to being ubiquitous with a market penetration of 60-70%, there is another 30 to 40% of users that don't use one. I am one of them. I bought my Philips MP3 player for value and to avoid the inherent restrictions that are placed on iPods, ie. only able to use iTunes for copying files between computer and player. One of the attractions with my player was the use of a standard USB connection to connect to the computer, but what I find startling is the absence of a USB connection on most docks. I would love to play and charge my player at the same time. I suppose it's to do with market penetration (sales) rather than standards. Maybe they can bring out an adapter!

John Finlay
Balaclava, Vic

standards of writing.

Colin Hill
Nth Rockhampton, Qld

RAID POLICE

While I found the RAID primer by Mike Le Voi in April's edition to be quite informative, it appears to be saying that RAID 10 actually consists of 4 disks in a RAID 1 configuration. It further says that RAID 0+1 and RAID 1+0 are the same: they are not. In fact, RAID 1+0 and RAID 0+1 both use different combinations of striping and mirroring. RAID 0+1 (also known as RAID 01) is a mirror of stripes, while RAID 1+0 (also known as RAID 10) uses a striped set of mirrors. Whilst this may sound like nit-picking, it is actually quite important because RAID 1+0 is generally more robust that RAID 0+1. A failure of two disks in different striped sets is not usually recoverable while using RAID 0+1, while RAID 1+0 is far more tolerant and can more easily handle such a scenario.

Chris Sherlock
Guildford, NSW

USER TRUST

When I read the first article "Not a liar, just not correct" (*APC* March , page 24 by Jonathon Warren), I thought it was a strange point that he was so keen to make it out that the HP tech was trying to call him a liar and not just trying to do his job correctly and efficiently. Chances are Jonathon may have well been right all along, but you cannot trust the word of every user that calls in. It was good to see the article "Not a liar, not right either", (*APC* April, page 16) to give another light on the subject.

James Ransom
Bruce, ACT

OFF TOPIC

I have been reading *APC* since the first edition and I believe it is now time for a name change for your magazine, perhaps to "*APC* and anything else that takes your fancy". The magazine now covers both computer and non-computer topics. Why is there a need for reviews of televisions, phones, Blu-ray players, digital cameras, camcorders and media players? The May issue contained eight pages of reviews of accessories for iPods. Listening to MP3s is bad enough, but then to have it amplified through one of these speaker systems would be unbearable.

While on sound, David Neiger suggests a home theatre in a box for inexperienced people. Do not buy one as you will be disappointed very quickly.

There is a new battery powered screwdriver on the market with an LCD screen. I hope you won't be reviewing this.

Stewart Kidd
Greenwith, SA

apc

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16 enduser

FROM THE READERS OF APC

apcenduser@acpmagazines.com.au

Do you work in the IT industry and are forced to deal with inept and clueless end users on a daily basis? If you have an interesting or amusing story, email us at apcenduser@acpmagazines.com.au. All correspondence becomes the property of *APC* and is subject to editing. Letters must include writer's full name, street address, suburb, state and phone number to be considered for print publication and to be in the running for prizes. Address and phone details will not be published.

Dumb end users in Parliament

Chris Hall from South Perth worked for Hansard when the Parliament of Western Australia was finally dragged kicking and screaming into the 20th century and decided to install PCs in every department back in the 1980s. He says he expected a few teething problems as the leaders of the people of Western Australia came to grips with computers... and he got them! He recalls: "Early in the process, the deputy Parliamentary Librarian advised the IT department that his brand-new PC would not boot-up. After spending 15 minutes trying to get some life out of the PC, the IT support staff discovered the PC power cord had not been plugged into the wall socket!" Hall says it never occurred to the Librarian that this was a necessity.

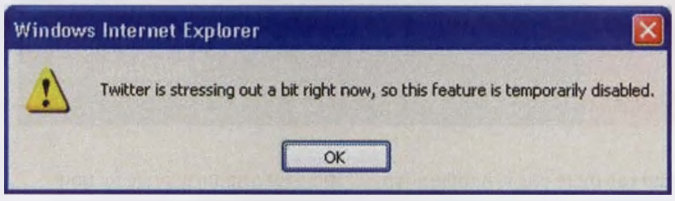
Another "very senior" new user complained that her headers would not stay at the top of her pages, says Hall. "It seems she had typed the headers at the top of each page of her 'finished' document rather than installing them by way of the headers and footers function. When she subsequently edited the document by adding and deleting text she discovered she had wandering headers!"

X-RATED FOLDER

Bruce Gibson, from Singleton, NSW, says he doesn't work in the IT industry, but he's the best geek in a family with many PCs: "I recently made my (non-geek) wife her very first MP3 CD for our new car. After listening to it for a week, she was thoroughly delighted, but didn't like the fact that I had put rude stuff on it. She hadn't been brave enough to play the offending item, but kept seeing the name on the big SatNav screen. I assured her that there was nothing on the CD other than what she picked, but to no avail, so she showed me. Sure enough, on the display was 'Root Folder'."

ESCAPING TWITTER

We've had several end users, even geeks, complain to us about the impossibility of cancelling online social networking subscriptions. Matt Morris tried Twitter recently and found it harder to cancel than a gym membership. He says the service should be renamed 'twitter fist' as it seems you cannot simply unsubscribe from it. "I signed up to this new time waster a few days ago to see what the hype was about, read about 10 of P.Diddy's pieces of fluff and decided it was not for me. So after finding the reasonably easy to find 'Delete my account' link, I clicked on it to get the above response."



MOVIES FOR DUMB USERS

How would you redo computers and computer software to completely eliminate the concept of dumb end users? Easy, says reader Jonathan Martin, from Brisbane, movies have already taken the lead in showing how computers should work. "Whenever a computer screen is shown, most times the font is really huge, meaning dumb users are less likely to be confused," he says. "Also, any computer device is always plug and play, so dumb end users don't have to worry about making Macs work with PCs or Unix boxes. Video always plays full-screen without any dropped frames, so dumb end users don't have to worry about codecs and having enough CPU/GPU power. And when the computer activity is finished, the dumb end user just switches off the computer, without having to worry about saving." Eh, we think Jonathan is onto something. We'll pass this on to the Windows and Mac OS X development teams.

PUBLISHED ENTRIES GET THIS

TP-LINK's new TL-SF1008P 8-port 10/100M Desktop PoE switch is the ideal solution for maximising your network requirements, integrating 10/100Mbit/s Ethernet and Power Over Ethernet (PoE). Four of its eight auto-negotiation RJ45 ports support PoE functionality, making it possible to transfer data and power through the same network cable. It automatically detects and supplies power to IEEE 802.3af compliant Powered Devices (PDs), giving you flexibility in employing your PoE-enabled devices such as IP phone or IP cameras. The TP-LINK TL-SF1008P 8-port 10/100M Desktop PoE switch offers great convenience for your home or office network. Valued at $144.95.

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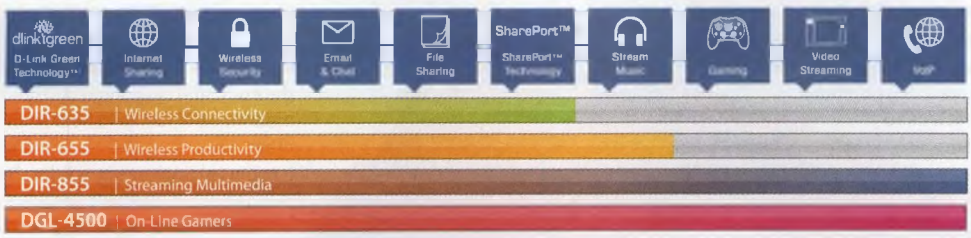

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watchdog

KEEPING AN EYE ON VENDORS!

watchdog@acpmagazines.com.au

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Post-warranty hell

A Watchdog investigation has uncovered an ongoing failure by big vendors like Dell to promptly fix customer hardware when it's out of warranty.

It seems that if you buy a Dell computer and it develops a fault, don't expect to get it fixed quickly, if at all, when it's out of warranty. Our Watchdog inbox is full of APC readers with faulty Dell notebooks who've gone through what one describes as a "Dell hell" of DIY web-based troubleshooting that doesn't address the faults, of telephone support that doesn't provide solutions and of technicians that never call back. Nobody expects their faulty machine to be fixed for free when the warranty is over, but the frustration kicks in when the vendor is unable to tell them where and how the hardware can be fixed.

As one reader with a faulty Dell notebook said, "I just want them to point to me to a dealer who can actually fix the thing. If Dell's attitude is really that your notebook is not worth fixing after its warranty expires, they should at least be upfront and say so. I have wasted so much time trying to get my Dell Inspiron 6400 (which has valuable family information on it, such as photos and my kids' schoolwork) fixed that I have just about resigned myself to never seeing it work again."

This reader, a senior manager in a publishing company who doesn't want her name published, says her notebook stopped booting in March this year. She says that when Dell phone support could not identify the problem, "they told me to log in to Dell's web site with my computer number to see if anything matched my problem. Of course, there was nothing on the Dell site that matched my problem. I tried many different times to find a match but gave up in the end as it was taking too long. So I gave up on online and went to a Dell kiosk at Chatswood, explained the problem with the computer, and was told to go online and go through exactly the same steps as I already had! I decided this was a waste of time and thanked him and left. So I have a Dell notebook that's dead and Dell doesn't want to know about it."

Another reader, Enid Harland, from Alice Springs, rang Dell several times after her notebook (purchased last May) developed a keyboard fault. "I was waiting for such long periods, only to be told a technician would call me back and I never got the return calls," she says. "I have tried getting to them on the net, but none of Dell's online problem-solving items cover this problem. I have written to them, with no reply. I know I can bring up a keyboard on the screen, but this takes up space. I now have to use a separate keyboard."

Yet another *APC* reader, Carola Levinier, has experienced difficulties. "How peculiar that it happens, as like so many other customers, after 12 months," she says. "I have called Dell about my faulty Inspiron notebook and they refuse to offer any help because my warranty is out by two months!" Levinier is so incensed she's taken her case to Consumer Affairs.

These are just the most recent examples in a long list of complaints received by *APC* and not restricted to Dell. Watchdog is preparing a special report in next month's *APC* that will also carry the company responses. In the meantime, we'd like to hear from other readers who've had similar trouble getting the big vendors' help in fixing out-of-warranty hardware.

Write to us at ***watchdog@acpmagazines.com.au***

UNSUPPORTABLE
Should 'out of warranty' also mean that you're 'out of options'? Readers slam evasive manufacturers.

SONY

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New **Vegas™ Pro 9**, including Vegas™ Pro 9, DVD Architect™ Pro 5, and Dolby® Digital AC-3 encoding software, is on the air! Award-winning Vegas Pro now offers a wide range of broadcast functionalities, making it one of the most powerful, efficient, and cost-effective nonlinear editors available.

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For more information or a trial version, visit www.sonycreativesoftware.com

*Vegas Pro Production Assistant sold separately.

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High Definition. It's in our DNA

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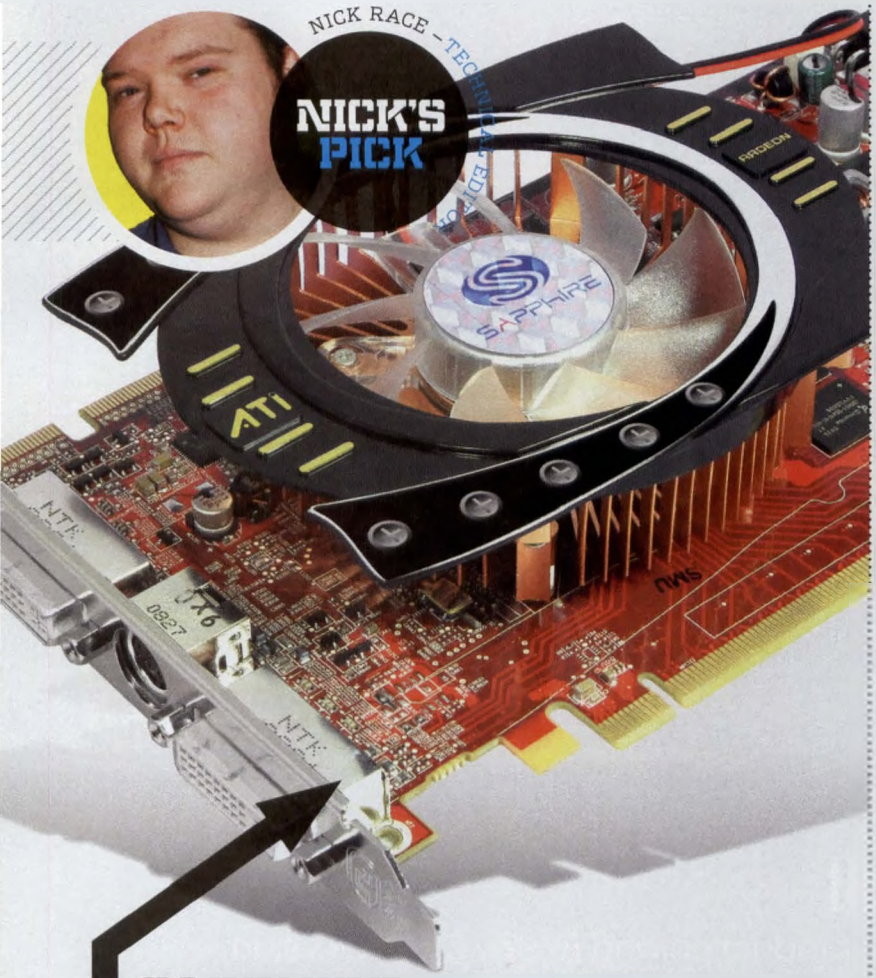
20 the lab

PRODUCT REVIEWS & COMPARISONS



SAPPHIRE HD 4770

Getting excited about a mid range product isn't generally how we roll, but this is a killer. The HD 4770 graphics chip from AMD is its way of bringing some new technology to low budget computing. A 40nm chip process means its cooler and more energy efficient, while the new design brings better performance for the same price. What's not to like?

PERFORMANCE ✪✪✪✪

For its price tag, the performance of the HD 4770 card is better than ever. A strong showing in the middle of the market is good news for all users.

PRICE ✪✪✪✪✪

At less than $200, you get a card that's capable of taking care of nearly everything. Sure, high end gaming is out, but that's not what this card is about.

SETUP ✪✪✪

Too bad the new 40nm process didn't see it going with a smaller and quieter cooler and card. Using the same design does cut down costs, however.

LABS ROUND-UP

NEWEST NETBOOKS

What's the best bang for your buck when it comes to netbooks? APC investigates.

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the storehouse

6/10

LG Arena KM900

The 3D graphics are flashy, but the novelty wears off quickly.

LG
www.lge.com.au
$799

DivX compatibility; Dolby Mobile audio; 8GB of built-in storage.

Sluggish interface; fake multi-tasking; laggy text input.

SPECIAL FEATURES
S-Class UI
3in display
3.5mm audio jack

We've seen a near-endless stream of iPhone copycats through the *APC* Labs in the last two years, but none of them have really tried to compete on the software side of things until now. LG's latest touchscreen phone boasts the new 3D S-Class user interface, which, on a pure eye candy basis, trumps the iPhone at every turn.

There's a 3D cube for flicking through the four main homescreens (widgets, contacts, multimedia and shortcuts), a rolodex-style reel for flipping through multimedia and contacts, and sliding rows of shortcuts on the main menu that effectively doubles the amount of icons that can be displayed.

LG has also been quite liberal in 'borrowing' elements of the iPhone's user interface, like the multi-touch gestures for zooming in and out of a web page, the lock screen and a proximity sensor that automatically turns the screen off when you're holding it up to your face during a phone call.

Unfortunately, LG hasn't equipped the Arena with enough firepower to pull the 3G graphics off gracefully, and the system as a whole feels sluggish to use. Even the features that are copied from the iPhone haven't been implemented very well. While it uses a capacitive touchscreen like the iPhone, it doesn't feel nearly as responsive or sensitive, and it frequently lagged while we were typing with the on-screen keyboard.

Beauty is only skin deep: does the Arena's snazzy side make up for its shortcomings?

The flashy cube interface and 3D animations are a thin layer of paint over what's really quite a simple and basic proprietary operating system. The faces of the 3D cube aren't even live, so when you're spinning it around, it displays the demo contacts, multimedia, widgets and shortcuts instead of your own. We were impressed to find support for muti-tasking, but it's not the real thing — you're limited to nine specific applications that you can launch concurrently.

There are lots of other things that bothered us on the LG Arena: we could only download a maximum of 300 emails across all of the accounts we set up at a time (and there's no way to limit the email downloads in each account to a particular number of days or emails); we somehow managed to keep on hanging up on people or putting them on hold during phone calls; the web browser would always warn us that 'Connecting the network may charge' before launching a web page (no, really?); and it was abominably slow at opening sites — regardless of whether you're connected over Wi-Fi or HSDPA.

As bad as it is at everything else, the LG Arena almost makes up for it all with its stellar multimedia performance. The specs speak for themselves: an 8GB in-built flash drive (with microSD expansion up to 32GB), a sharp three-inch screen with 800 x 480-pixel resolution, a 3.5mm headphone jack and excellent bundled earbuds, powerful high-quality stereo speakers with Dolby Mobile audio, a five-megapixel auto-focus camera with Schneider-Kreuznach lens, and an FM transmitter for streaming music wirelessly through an FM radio.

The promising hardware spec is backed up by a strong suite of multimedia applications. The Music application supports the usual codecs (MP3, AAC, AAC+ and WMA), but offers a funky interface with a graphic equaliser, cover art and visualiser, while the video player supports DivX and XviD videos. For some reason it wouldn't play any of our XviD-encoded TV shows or movies when we copied them across, but they played perfectly after encoding them with the supplied DivX Mobile software (which also cut the file size in half).

LG has done a great job with the S-Class user interface, but the Arena's processor simply isn't powerful enough to do it justice. The limitations of the core operating system, like the fake multi-tasking and cap on emails, are also in stark contrast to the sophisticated 3D graphics. Multimedia playback is excellent, but it's not enough to make up for the rest of the LG Arena's flaws.

Jenneth Orantia

7/10

MOTOSURF A3100

Motorola rises from the ashes with a strong smartphone.

Telstra
www.telstra.com.au
$829

✔ Excellent bundled software; hardware design; performance.

✖ Poor-quality screen; limited on-board memory; no accelerometer.

SPECIAL FEATURES
2.8in QVGA display
Win Mobile 6.1 Pro
Custom HTC and Telstra UIs

Being the first Motorola phone that we've tested this year, we had high expectations for the MOTOSURF A3100. Available exclusively through Telstra on its Next G network, it's the first Windows Mobile Professional smartphone that Motorola has released in Australia (its previous phones ran the non-touchscreen Standard version of Windows Mobile).

The MOTOSURF A3100 manages to look unique despite having the same 2.8in QVGA display as most other WM6 Pro smartphones. It's a tad thick at 13.7mm, but it's lighter than it looks at 119g. The rounded corners and compact height and width makes it feel great in the hand, and the chrome frame and brushed metal backplate gives the phone a very premium look.

Motorola has kept the front of the MOTOSURF A3100 relatively simple, with only two colour-coded call buttons and a trackball that glows different colours depending on whether you've got a missed call, it's charging, or there's an incoming call. We'd like the trackball better if we could get away with using it all the time in lieu of the stylus. Unfortunately, Windows Mobile Pro is still very much a stylus-driven operating system, and for the most part you'll still have to tap on the screen to open the Start menu, press the OK button and launch menus.

Now that many smartphones have made the jump to VGA and WVGA resolutions, the MOTOSURF A3100's dinky 320 x 240 resolution is a bit of a let-down. What's worse is that the viewing angles on the display are terrible. If you look at it even slightly off-centre, the colours shift dramatically — a problem that we haven't seen on smartphone touchscreens in over two years. There's also no accelerometer, but you can switch the orientation to landscape manually by pressing and holding on the end call button.

Wisely, Motorola has followed HTC's lead and customised Windows Mobile 6.1 to make it more user-friendly for everyday users. There's a slick animated carousel on the Today screen for moving between the different homescreens (including an info panel, photo speed dials, weather and application shortcuts), a custom XT9 software keyboard that makes it easier to type on the screen (it's large enough to type on with your fingers, but it's still faster to use the stylus), and lots of excellent third-party applications like Opera Mobile 9.5, YouTube, Facebook, ShoZu, Documents To Go (which, funnily enough, seems more full-featured than Microsoft's Office Mobile suite) and Spore.

Telstra has customised the Today screen with its own TelstraOne interface. This offers similar functionality to the carousel but adds a selection of widgets that you can flick through. We wish Motorola had thrown in a decent multimedia player, as the default Windows Media Player Mobile is very average when it comes to music and video playback. A shame, as the MOTOSURF A3100 is otherwise very well-equipped as a portable media player. Audio from the external rear-mounted speaker is clear, powerful and detailed, and a 3.5mm headphone jack on the top means you can plug your own headphones in. The 256MB of flash memory is unremarkable, but you can top it up with a microSD card up to 32GB.

Rounding out the fort is 802.11b/g Wi-Fi, Bluetooth, a three-megapixel camera with LED flash and GPS. Even with a half dozen programs open simultaneously, the MOTOSURF A3100 performed with hardly any lag — a tribute to the 528MHz Qualcomm MSM 7201A processor and 128MB of RAM.

Jenneth Orantia

ASUS
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Sat: 9am to 3pm, Sunday and Public Holidays: Closed

Say cheese: this Sony impresses with its high-quality camera functionality.

9/10

Sony Ericsson Cyber-shot C510

This entry-level cameraphone offers unbeatable value.

Sony Ericsson
www.sonyericsson.com.au
$389

Decent camera; custom Facebook app; highly affordable.

Can't connect standard headphones; cramped keypad.

SPECIAL FEATURES
HSDPA
GPS
Bluetooth
3.2MP camera

APC MAGAZINE apc EDITOR'S CHOICE

We've never been overly impressed with high megapixel counts on cameraphones. Image quality gets slightly better on the higher-spec models due to better optics and more sophisticated software and processing, but none of that has anything to do with megapixels.

This hasn't stopped Sony Ericsson — the only phone company that also produces standalone digital cameras (under its Sony parent) — from rolling out five- and eight-megapixel cameraphones, but for those that aren't fooled by the megapixel marketing sham, or are on a tight budget and can't afford one of the more expensive handsets, the Cyber-shot C510 is a promising alternative.

For the money, the C510 offers an unprecedented set of high-end features: HSDPA, GPS, Bluetooth, an accelerometer, and custom Facebook and YouTube applications. On the Cyber-shot end of things, it's got a 3.2-megapixel camera with auto-focus, an LED flash, and nifty features like face detection and smile shutter.

This sort of firepower usually results in a mid- to large-sized phone, but the Cyber-shot is remarkably thin and light, measuring 107 x 47 x 12.5mm and weighing less than a 100 grams. The 2.2in screen is relatively small, but it's bright and vivid, with excellent viewing angles and colour depth. It looks cheaper compared to Sony Ericsson's higher-end phones like the Walkman W705, but not in a nasty way — the back has a rubberised finish that's pleasing to the touch, and there's a silver/blue trim around the middle that provides a nice contrast to a predominantly black body.

The 3.2MP camera is situated on the back behind a lens cover, and sliding it to the side automatically launches the camera application. There's a dedicated shutter button on the top, and the right-most column of buttons on the keypad become shortcut buttons for shoot mode, scenes, focus and flash. The software looks almost identical to what's used in Sony Ericsson's premium Cyber-shot phones, with a wide range of tweakable settings including burst shooting, spot metering, adjustable white balance, geotagging and different colour modes. A few things have been left off the menu though, like Smart Contrast, BestPic and a digital image stabiliser.

The Cyber-shot C510's photos won't win any awards for sharpness or low-light sensitivity, but in good natural lighting the shots are fine for sticking on Facebook or making low-res prints. The face detection works reasonably well for picking out people in the frame, and this is the only phone we've used where the smile shutter feature (which automatically snaps a picture once it detects a grinning mug in the frame) works without having the person smiling like a wooden doll for half a minute. Unlike the Cyber-shot C905, it doesn't have a Xenon flash, so taking photos at night with the LED photo light can be a struggle.

The C510 offers the same excellent Media application used in Sony Ericsson's Walkman phones, which arranges music, movies, photos, games, web feeds, audio books and podcasts in the same Xross Media Bar interface found on the PlayStation 3 and PSP. The rear-mounted speaker is surprisingly powerful for an entry-level phone, but you're limited when it comes to connecting headphones; it uses the same proprietary connector as on other Sony Ericsson phones, but unlike with the Walkman series, there's no 3.5mm adapter in the box, nor do you get the premium quality earbuds.

Other software enhancements include the new threaded text messaging interface, YouTube integration with the Media app, and a custom Facebook app that displays an animated slider of your friends' profile photos along with their latest status update on the standby screen.

Jenneth Orantia

6/10

Toshiba Portégé M800

Flexible in all the wrong places.

Toshiba
www.toshiba.com.au
$2,750

Decent specs; great screen; plenty of HD space. ✔

Far too expensive for the specs; case flex is worrying. ✖

SPECIAL FEATURES
Intel Mobile Core 2 Duo 2.66GHz CPU
Intel GM45 Express chipset
2GB DDR2-800 RAM

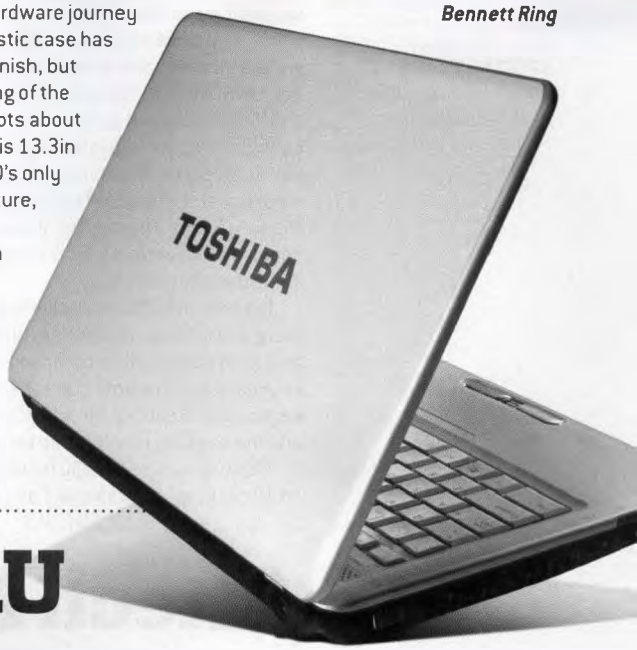
Toshiba doesn't have a reputation for delivering notebooks at bargain basement prices. The Portégé M800 is a fine example of this; compared to similarly specced notebooks, it's downright expensive, and it's a bog-standard business notebook to boot. A well-configured one, but if you're looking for novel features and advanced functionality, the M800 will leave you unsatisfied.

A dual-core Intel Mobile Core 2 Duo purrs by at a speedy 2.66GHz, running on the whiff of an electron rag when in low-power mode, at only 1.06V. This low operating voltage accounts for the silence of the M800, as the cooling system doesn't need to be aggressive. It sits atop an Intel GM45 Express chipset with integrated graphics. This entry-level video chipset won't break any benchmark records, but it is certified to decode Blu-ray flicks. Unfortunately there's no Blu-ray drive though, a decidedly average DVD+-RW is fitted instead. Two gigabytes of DDR2-800 handles Vista Business easily, while the 400GB hard drive is only noteworthy for its decent capacity. Its 5,400RPM spin speed isn't anything to write home about.

Looking outside of the case, the underwhelming hardware journey continues. The plastic case has a slick gun metal finish, but considerable flexing of the screen leaves doubts about its ruggedness. This 13.3in screen is the M800's only distinguishing feature, offering excellent image quality even from the widest of viewing angles. The keyboard rises noticeably in the centre, and it too flexes with heavy use. Even the touchpad is uninspiring, being vastly inferior to most notebooks we've seen in the last year or so.

Knock a thousand dollars off the price and this would be a great mid-range unit, but in this price bracket lags it's far behind its competitors.

Bennett Ring



9/10

HP dv2-1001AU

Left out in the cold.

HP
www.hp.com.au
$1,199

Chassis design looks great and feels solid; powerful hardware. ✔

US model has more; lacks any kind of optical drive. ✖

SPECIAL FEATURES
AMD Athlon Neo processor
2GB RAM
250GB HDD

APC MAGAZINE apc EDITOR'S CHOICE

Astonishing value for money. Hardware with oomph. A classic, slick design. Hardy construction. These are the phrases that we'd normally save until the end of the review. With the dv2-1001AU, we couldn't help but sing the praises right from the start.

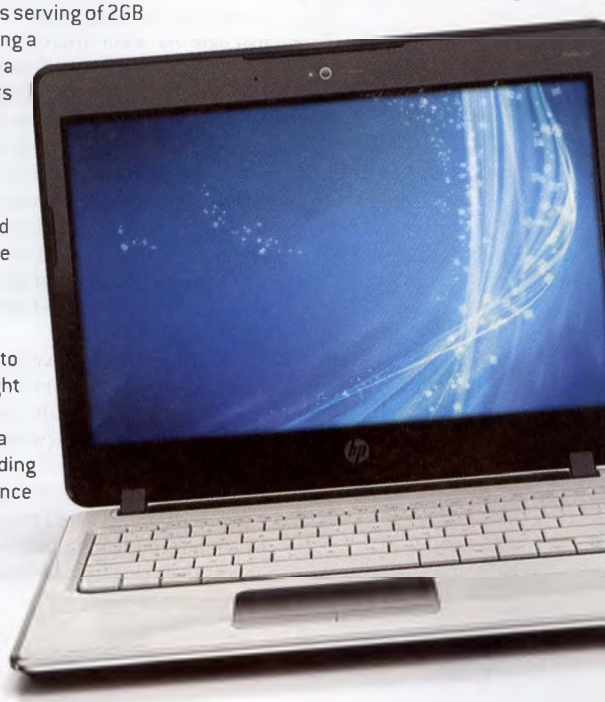
Let's begin with the gorgeous piano black exterior. It requires cleaning every other hour, but when combined with the chrome trim lends the dv2 a simple yet sophisticated air. Opening the screen reveals chunky, thick hinges, which have a firm, reassuring range of motion. The touchpad is decked out in the same chromed finish as the edge of the base. The magnesium alloy chassis makes the base absolutely rock solid, with zero flex of the keyboard. The screen is a little less rigid but doesn't warp anywhere near as much as some ultra-budget notebooks we've seen. We've got no concerns with the dv2's ability to handle some rough and tumble.

Residing beneath is an AMD Athlon Neo Processor, purring away at a healthy 1.6GHz. Its performance won't set the world on fire, but benchmarks put it ahead of similarly clocked Atom processors. A generous serving of 2GB RAM makes multitasking a plausible reality, while a 250GB hard drive offers plenty of space.

The Radeon X1250 chipset is fine for DVDs but won't cut the mustard for high-speed gaming or HD video. The X1250 powers a crisp and clear 1,280 x 800 12.1in screen, which uses LED backlighting to provide very even, bright lighting.

The dv2-1001AU is a fantastic offering, melding the price and convenience of a netbook with the feature-set of a full-fledged notebook. But discovering the Australian version is inferior to the US version disappointed us.

Bennett Ring



8/10

ASUS Eee Box B204

Small in size; not in usefulness.

ASUS
www.asus.com.au
$899

Looks great; low power consumption; quiet; small.

Bit pricey; low powered.

SPECIAL FEATURES
'Easy Mode'
1.6GHz Atom processor
1GB RAM

The B204 was always meant to rival the Mac mini for diminutive computing in a stylish shell, but it may actually surpass it. Coming in a tiny 'one-litre' chassis, it feels solid and looks great.

It's tricky to say which is the front or the back, as you can mount it in so many different ways. One end has two USB ports, a wireless antenna (for 802.11n), gigabit Ethernet and, new for the Eee Box, an HDMI port. The power button and 'front' mounted ports are hidden behind a discreet flap joined by two more USB ports, two audio jacks and a card reader that supports SD/MMC and Memory Sticks. The speaker audio jack doubles as an optical S/PDIF thanks to an (included) adapter.

In addition to the mounting bracket there's a USB extension cable, HDMI port (and cable!), Bluetooth mouse and keyboard and a remote control. The keyboard is small but feels high quality and the keys are comfortable to type on.

Although you're initially faced with an XP desktop, you can use 'Easy Mode', which is ASUS's quick-launch menu system — an evolution of the original Eee PC's layout. Apps are represented by large, friendly icons across three tabs: Fun, Work and Tools.

Inside there's a 1.6GHz Atom processor and 1GB of RAM. Radeon HD 3450 graphics are also included, which helps take the video decoding burden off the processor. It will play most HD video smoothly but will struggle with all but ancient games.

There's no optical drive and only a 160GB hard disk, so you're best off adding it to a home network in order to play your favourite media; we're happy to see fast networking like gigabit LAN and 802.11n wireless. An integrated TV tuner would make it perfect for the living room, but you can add one via USB.

At $899 it's pricey, but for a basic PC or media box, it's great.

Nick Ross

8/10

Altech NRG Tornado

Hums like a Tornado.

Altech
www.altech.com.au/nrg
$2,299

Fast Core i7 2D performance; GTX 295 gaming power; looks good.

Bit noisy.

SPECIAL FEATURES
Core i7 920 processor
3GB RAM
NVIDIA GTX 295

The NRG Tornado is undeniably high-end, using sensible-but-powerful components and some judicious tweaking to come up with a powerful machine that's still affordable. It's built within Antec's new Nine Hundred Two case, which is a step up from its predecessor and has improved airflow. There is plenty of room for all of Altech's components and potential future upgrades too. It is well cooled thanks to two 120mm fans at the front, another at the rear, one at the side and a whopping 200mm fan at the top. We also like the fact that washable air-filters are included.

A side shows an air-overclocked Core i7 920 processor which is ramped up from 2.66GHz to 3.6GHz beneath a Thermolab Baram cooler with another 120mm fan. With 3GB of Corsair Dominator RAM (in triple channel) it screamed through our PCMark Vantage benchmark by scoring 7,693 — an impressive score from an air-cooled 920. Things are just as good for 3D with the all-conquering NVIDIA GTX 295 included. This baby is essentially two GTX 285s strapped together in SLI on one card. It's score of 21,921 in 3DMark Vantage is as expected. Quite simply, it will play all current games with aplomb. Storage comes from two Hitachi 500GB hard disks in a RAID 0 striped array and everything is embedded in a Gigabyte GA-EX58-UD3R motherboard, which is a proven fast and very-reliable performer.

Connectivity is as we'd expect with two USB, two audio jacks and eSATA on the front. At the back is a generous eight more USB ports, PS-2 ports for legacy mouse and keyboard, optical and coaxial S/PDIF out ports, six audio jacks, FireWire and Mini FireWire and a single gigabit Ethernet port. So, it's powerful, looks good and is fairly priced. Note, the fans in the case are rather loud, and there's only a one-year RTB warranty.

Nick Ross

7/10

Thermolab BARAM

Powerful cooling on a budget.

Thermolab
www.thermolab.co.kr
$75

i7 support; good performance. ✔

No fan included. ✖

SPECIAL FEATURES
54 aluminium fins
LGA 1366 i7 support

If you're interested in overclocking, one of the most important extras that you'll want to buy when building your PC is an aftermarket cooler. Today we'll be looking at one from the Korean-based company Thermolab, the BARAM (which means air flow).

Upon pulling the BARAM out of the quite plain brown box, you can't help but notice the fact there's no fan present. While annoying to most people, it isn't uncommon in the higher-end market. While the lack of a fan does drive the price up in the end, what it does allow you to do is decide if you want a quiet fan that won't cool as well, or perhaps something louder that is going to give you the best temperature possible out of the unit.

The BARAM consists of 54 aluminium fins to help move the heat away from the cooler and five copper heat pipes to keep the base cool. Standing at a pretty reasonable 160mm tall, the tower structured cooler comes in at 625g without any fans being installed.

Using a 120mm NF-P12 fan from Noctua that pushes out a healthy 54CFM, performance is up there with other high-end tower-designed coolers we've seen. With our i7 920 going strong at 3.8GHz, we find the average temperature of the cores being around the 60-69c mark after a few hours of 3DMark Vantage looping.

With support for all the latest CPUs, which includes the LGA 1366 i7 lineup from Intel, the BARAM is a good choice for people who want a new cooler for their Core 2-based CPU and would like to upgrade to i7 later on without having to worry about purchasing a new CPU cooler.

Shane Baxtor

8/10

Sapphire HD 4770

Cooler, cheaper and good performance.

Sapphire
www.sapphiretech.com
$169

40nm technology; price: performance. ✔

Dual slot cooling. ✖

SPECIAL FEATURES
750MHz core clock speed
512MB GDDR5 memory
40nm technology

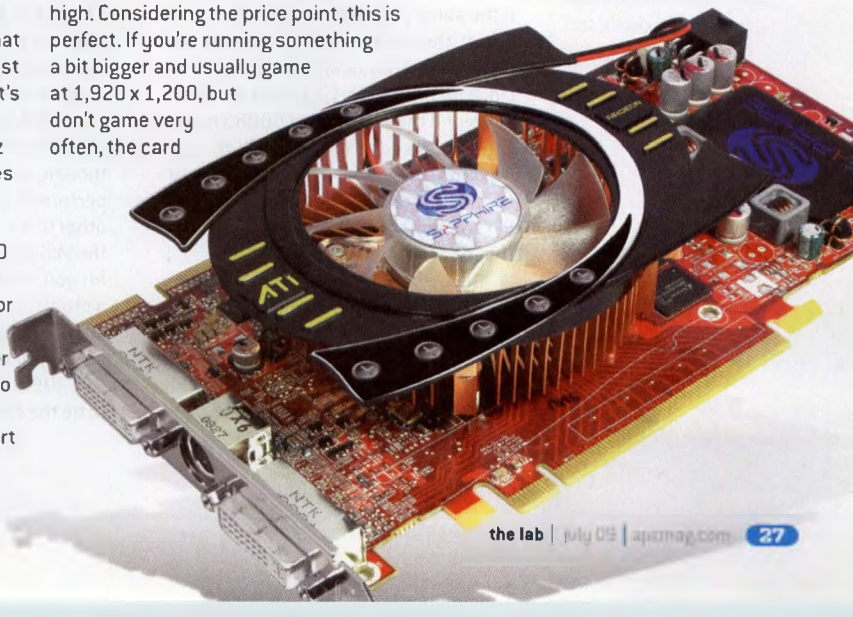
While there's no doubt that most people thought the HD 4700 series of graphics cards had been well and truly replaced with the HD 4800 series, ATI decided to release a new mid-range model labelled the HD 4770 aimed at people wanting a graphics card in that mid-$100 mark. In the specifications department the biggest feature that we see companies push is the fact that the card uses GDDR5 memory — a first for a mid-range card. This isn't all that's big — compared to the HD 4850 the core comes in at a whopping 750MHz vs 625MHz. The 512MB GDDR5 carries a clock of 800MHz, which equates to 3,200MHz DR on a 128-bit bus.

Not everything about the HD 4770 is big though. For the first time we've seen ATI move to 40nm technology for the core. What the smaller package means is the card requires less power to run, while also being cooler. It's also the main reason for such a high core clock compared to the older 55nm part seen on the HD 4850.

If you're using a 22in monitor and gaming at 1,680 x 1,050, this card is absolutely perfect for someone who doesn't want to spend big dollars. What we find is that in most new games the card runs at this resolution whilst having the detail set at high to very high. Considering the price point, this is perfect. If you're running something a bit bigger and usually game at 1,920 x 1,200, but don't game very often, the card again isn't a bad choice, with it playing most games with the detail set around the medium level.

Overall the performance is excellent for a mid-$100 card and caters to a large portion of the gaming community.

Shane Baxtor



8/10

GIGABYTE HD 4890 1GB

Not a next-gen card, but doesn't have to be.

GIGABYTE
www.gigabyte.com
$499

Good launch price; good value; decent performance. ✔

Small bundle; not next generation. ✖

SPECIAL FEATURES *i*

900MHz core clock speed
1GB GDDR5 memory

It was only going to be a matter of time until ATI responded to the huge line-up of NVIDIA graphics cards that have been released over the past few months. Word of the HD 4890 had been floating around for a while, but information on the card was scarce. What we did know was that the card was going to be based on a single core and this meant that while we should see some good performance, the chances of it beating the top-range dual GPU offering from NVIDIA was not going to happen.

Based on 55nm technology, the HD 4890 is more a souped-up HD 4870 rather then a new-generation card. Where the two cards differ, however, is in the clock rates. The HD 4870 launched with a default core clock of 750MHz, whereas the HD 4890 has been boosted to 850MHz and Gigabyte has kicked it up another notch to 900MHz. While both cards come stock with GDDR5 memory, the HD 4890's default size is 1GB versus the 512MB we saw on the HD 4870. The clock on this has also been increased from 3,600MHz Quad Data Rate (QDR) to 3,900MHz QDR, with Gigabyte again upping it to an even 4,000MHz QDR.

Performance on the card is good; compared to the HD 4870, we see nice jumps in performance. Against other cards like the GTX 260, performance is a bit up and down. In some places it pulls a win while in others it doesn't. For the most part, though, it sits behind the GTX 285, which is of course NVIDIA's top single GPU offering at the moment.

With performance not being as high as one would have expected, it wouldn't be too hard to be disappointed by this card. What ATI has done, however, is launch the card at a good price and again fill a price bracket that didn't have too many cards in it. What we ultimately have is an excellent-value card and a nice upgrade candidate. Don't expect it to beat out more expensive offerings and you won't be disappointed.

Shane Baxtor

7/10

MSI GTX 295

Still the fastest around.

MSI
www.msicomputer.com.au
$899

Performance. ✔

Bundle; price. ✖

SPECIAL FEATURES *i*

576MHz core clock speed
1,792MB GDDR3 memory
1,242MHz shader clock

If you find yourself wanting something fast in the graphics card department, there's no doubt that the GTX 295 is going to be at the top of your list. Due to the design of the card and its dual-PCB setup, we haven't seen anyone mix it up as far as cooling goes, so like other GTX 295s we've seen, the MSI version carries with it the same cooler. As is the case with the cooler, the clock speeds are also based on the reference design. We've got a core clock of 576MHz, a 1,242MHz shader clock and the 1,792MB of GDDR3 memory comes clocked at 1,998MHz DDR. The card requires a single 6-pin and 8-pin power connector to work. We also have a single SLI connector which lets us put two of these cards together.

On the bundle side of things there isn't a whole lot going on; we've got some power convertors along with a DVI to VGA connector and a DVI to HDMI connector. Along with those is the necessary S/PDIF loopback cable to allow sound to pass through the connector.

A few months on since the release of the card and some driver updates, the GTX 295 continues to perform better than ever before. There is no single card that can compare to the model, with it handling modern games at the ultra high-detail 2,560 x 1,600 resolution. If that's not enough and you want to start diving into AA and AF, then a second card is going to give you the FPS you need to max out all those settings.

As with most high-end graphics cards, the bundle is a bit light. If that's not something you care about, though, and all you want is performance, then like most other GTX 295s on the market the MSI offering is the card for you. If money isn't a problem and you're looking for some serious performance, the GTX 295 continues to be the card to buy.

Shane Baxtor

6/10 Shuttle X50

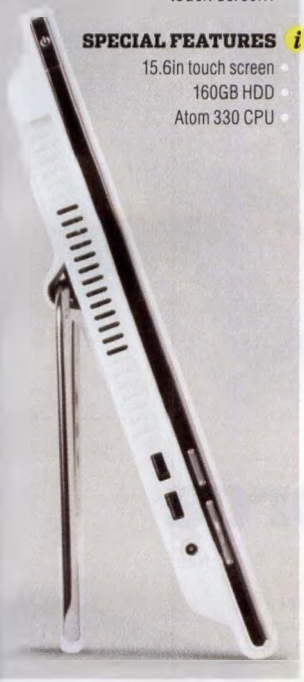
Get all touchy.

Shuttle
www.shuttle.com
$1,099

✔ Cheap for an all-in-one PC; great touch screen; reasonable performance at this price.

✖ The fans sound like a 747; where's the great software to back up the touch screen?

SPECIAL FEATURES
15.6in touch screen
160GB HDD
Atom 330 CPU



If imitation is the sincerest form of flattery, the X50 simply adores both the Apple iMac and the HP IQ500. Yet at half the price of its competitors, the X50 is the first all-in-one to land in the budget price bracket. Like the IQ500, the X50 has a major advantage over Apple's iMac. The 15.6in screen might be significantly smaller than the 20in iMac, but it's a touch panel, and an accurate one at that. Calibrating is quick and painless, and results in accuracy that equals the excellent response of the IQ500. It's such a shame then that this excellent touch-enabled hardware isn't backed up by the necessary software.

The X50 could have been a totally keyboard and mouse-free zone, had a tablet edition of Windows or Vista been included. Instead Shuttle has cut corners, shipping with the Home edition of Windows, an operating system devoid of any touch or handwriting functionality. If you're going to buy the X50, an OS upgrade is thus highly recommended.

Neatly tucked away below the screen are a couple of 2W speakers, and they're surprisingly clear when it comes to light listening duties. Above the screen sits a 1.3-megapixel webcam, which captures an astonishingly crisp video image.

Buried inside the 3.6kg case is an Atom 330 CPU running at 1.6GHz, residing on an Intel 945GC motherboard. A gigabyte of DDR2 memory is just enough to keep performance from being too sluggish, while the integrated GMA 950 graphics chipset is fine for decoding videos but not much else. 160GB of hard drive storage is the standard configuration at this price, but can be upgraded to a 600GB maximum.

It seems Shuttle has been overly concerned about avoiding the heating issues which plagued earlier iMacs. The fans within the X50's chassis spin at extremely high speeds, making this one of the noisiest PCs we've encountered.

Combine this annoying fan noise with the lack of touch software support, and the X50 is left wanting. The IQ500 might cost $900 more, but it's a much more rounded machine; with better software, a bigger screen, more powerful hardware and a handy TV tuner.

Building an all-in-one PC with touch support isn't easy though, so Shuttle should be commended that its debut all-in-one isn't a complete flop. Shuttle's small form factor PCs also had plenty of issues when they first hit shelves, but the company overcame those barriers and eventually dominated that market.

Bennett Ring

PARLIAMENT OF AUSTRALIA

Inquiry into Cyber Crime

The House of Representatives Standing Committee on Communications invites interested individuals, organisations and companies to contribute to its inquiry into cyber crime in Australia.

The Committee has been asked by the Minister for Broadband, Communications and the Digital Economy to inquire into the nature and incidence of cyber crime, in particular, identity theft and financial fraud, on Australian consumers and the impact of cyber crime on the wider Australian economy, the level of awareness and understanding of e-security risks within the Australian community, current measures to combat cyber crime and future initiatives, including emerging technologies, that will further mitigate and combat e-security risks.

Written submissions should be lodged by **Friday, 26 June 2009** and may be sent by email to **coms.reps@aph.gov.au** or by post to:

The Committee Secretary
House of Representatives Standing
Committee on Communications
Suite R1-109
PO Box 6021
Parliament House
CANBERRA ACT 2600

The full terms of reference and advice on preparing a submission are available on the Committee's website: **www.aph.gov.au/coms** or by phoning the Secretariat on (02) 6277 4601

Standing Committee on Communications

8/10

G.Skill PC3-16000

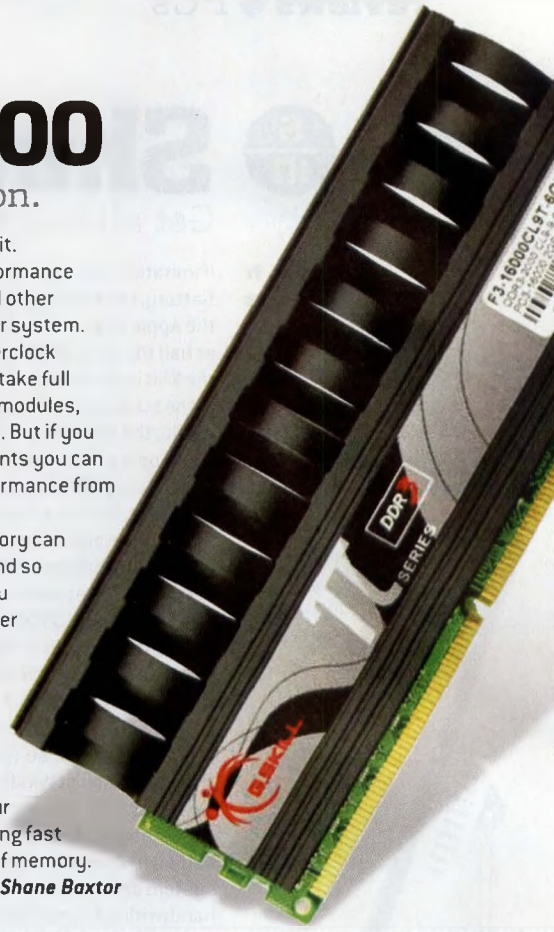
2,000MHz of very expensive silicon.

G.Skill
www.gskill.com
$599

6GB; 2,000MHz; perfect combination. ✔

Very expensive. ✖

SPECIAL FEATURES *i*
2,000MHz clock
6GB memory



It hasn't taken long for triple-channel memory kits to develop since the release of the i7 last year. For an enthusiast there are two features you want out of your memory: high speed and plenty of MBs. Until now you had to trade off the high speed for more memory and vice a versa. While we've seen 2,000MHz kits from companies on the market over the past few months, they all came in at 3GB.

No longer do you need to worry about trading off: G.Skill has just released a 2,000MHz or PC3-16000 kit that carries with it three 2GB modules, giving us a whopping 6GB of memory. The new Trident series from the company only has the one set of modules at the moment, but what a set.

At 2,000MHz the memory is rated for 9-9-9-24, which, while not being the most impressive timings we've seen from DDR3, is still very attractive for modules of this speed. To reach these speeds 1.65V is needed, which is pretty standard for a 2,000MHz kit.

As with most high-performance memory, though, you need other quality components in your system. Without a CPU that can overclock or a motherboard that can take full advantage of the memory modules, they are simply overpriced. But if you do have the right components you can expect some serious performance from the kit.

A 2,000MHz kit of memory can be had at a decent price, and so can a 6GB kit, but when you combine them both together the almost $600 price tag is going to be extremely hard to swallow for a large portion of the community. What the kit offers, however, is the ability to not only have your cake, but eat it, too: a blazing fast 2,000MHz clock and 6GB of memory.

Shane Baxtor

8/10

Lian Li 850W Silent Force

Lian Li's first power play in Australia.

Mittoni
www.mittoni.com.au
$299

Quiet; looks great; great performance. ✔

Only six SATA; expensive. ✖

SPECIAL FEATURES *i*
850 watts
Semi-modular design

Lian Li has opted for a semi-modular design with the Silent Force PSU.

Unlike most other high-profile case companies, Lian Li never had a power supply to bundle with its cases, but last year we saw the company enter the PSU market with two series being offered, the MAXIMA Force, which gives us a modest 470W unit and moves up to 750W, while alongside this we have the Silent Force series. With the Silent Force range of power supplies there are currently three models: an entry-level 650W, mid-range 750W and an 850W for the more demanding users.

Lian Li has opted for a semi-modular design, which means we find our main connectors built directly into the unit itself. While not everyone's favourite option, it helps prevent extra connectivity with important connectors like the 24-pin one used to power the motherboard. Other connectors include one 4+4 pin EPS12V, one 8-pin EPS12V, six molex, six SATA, two 6-pin PCI-E and two 6+2 PCI-E connectors.

With two HD 4870 X2s installed, we see a setup that runs around the 750W mark and peaks at over 800W. After leaving 3DMark Vantage looping for hours we see the machine going strong the whole time, letting us know that the unit's capable of handling the most power-hungry graphics card setups on the market. The Lian Li 850W Silent Force PSU isn't going to have any trouble with today's computer builds. All up, it's a good-quality unit that performs well and is nice and quiet.

Shane Baxtor

8 10

Thermaltake Element S

Fit everything under the hood.

Thermaltake
www.Thermaltake.com
$249

Great feature set; plenty of room.

Steel construction.

SPECIAL FEATURES
Multi-fan design
Nine-drive capacity

APC MAGAZINE HIGHLY RECOMMENDED

Expanding upon its case series, Thermaltake has added a new model named the Element S. Unlike the more recent cases we've seen from Thermaltake this particular model is a midi tower that stands at 505mm tall: only slightly smaller than the 536mm height of the full tower Spedo.

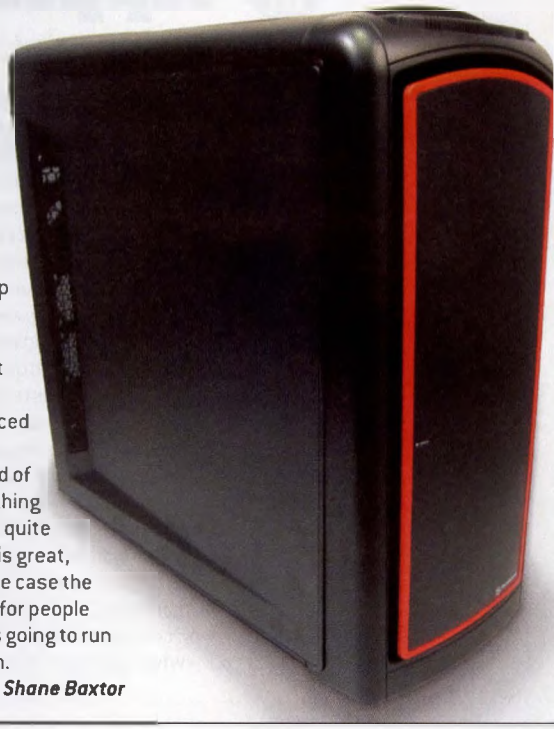
The predominantly black design with subtle red touches looks great. Behind the door we find three 5.25in bays up the top and just below that we find a pair of 120mm fans that help push cool air into the case from the front. Sitting at the top is our power and reset button along with connectivity ports that include 2 x USB 2.0 ports, eSATA connector and some HD audio ports. Closer to the back of the case we have another fan, but unlike the 120mm ones we saw on the front this one comes in at a whopping 230mm.

Thermaltake hasn't included any fans on either side, but we do have another fan on the back that comes in at 140mm with two smaller 60mm fans just below that: all these fans mean we're really able to get the hot air out of the case.

Inside the case we've got a fair bit going on; each panel consists of four anti-vibration strips to help keep noise down. There's room for seven 3.5in drives and something different, a spot for two 2.5in drives.

Thermaltake has produced a really nice though large midi tower that packs a load of features and covers everything from storage to heat. While quite expensive, the feature set is great, and if you like the look of the case the Element S is a great option for people who want something that's going to run cool and has plenty of room.

Shane Baxtor



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www.kworld-global.com

8/10

Apple Airport Express

Audio solution for those who drink the Kool-Aid.

Apple
www.apple.com.au
$179

Easy to use once set up; good sound quality. ✔

Only works with iTunes. ✖

SPECIAL FEATURES *i*
802.11n

If it's one thing Apple does well it's cool, and there is little doubt that the Airport Express is really cool. The concept is simple; include a streaming media device on your wireless network device so that you can stream music to it (as well as share the internet, extend the range of your network and share a USB printer). Once you have set up and connected the device to your network, use iTunes on any Mac or PC to stream music to the device so you can listen to your digital music collection away from your PC without having to carry around an iPod.

Setup is a simple matter of loading the install CD, downloading all of the updates (around 100MB including the latest version of iTunes) and following the prompts. Just don't try it from a virtualised PC environment because it won't detect the Airport Express!

When you start iTunes, it recognises the device and gives you the option to stream music to the Airport Express as well as listen through your PC or Mac speakers. The Airport Express uses 802.11n (draft) standards so if you are using it with a compatible base station performance is excellent and the range is large enough to cover most houses.

Sound quality is amazing. We connected the unit up to a set of powered Altec Lansing Expressionist Bass speakers and found the audio was well balanced, clear and free of digital artefacts. If you have an iPhone or iPod Touch you can download the free remote application from the App Store and remotely control your iTunes playlist.

Like with most Apple products, it is designed to work in an Apple environment, so it only works with iTunes. Despite this we still love it!

David Neiger

Proprietary Apple solution packs in the cool (as per usual).

8/10

HP Officejet Pro 8500

Smart office functionality.

HP
www.hp.com.au
$499

Full networked faxing; touchscreen operation; web-based scanning; generous duty cycle. ✔

Quiet operation marred by clunks and beeps; could be quicker. ✖

SPECIAL FEATURES *i*
Touchscreen LCD
Standalone fax
Memory card input

The Officejet 8500 is aimed at small offices with reasonably heavy printing demands and has a 15,000 page per month duty cycle. Standard features include Ethernet, Wi-Fi (b/g), USB 2.0, a duplexer, fax, ADF and four memory card slots, so it's well specified.

The touchscreen colour LCD is used for most functions other than basic faxing and copying, and simplifies the front panel. Just get into the habit of using a fingernail rather than a fingertip.

The first page of our 'business' document emerged in 41 seconds, with the second dropping 9 seconds later. If we're generous and call that 7ppm continuous, it's well short of the nominal 19ppm. Colours are relatively muted, as if there's too much black in the mix. Text quality is good as inkjets go but doesn't match laser output, and drying time slows duplex printing.

Photos printed on HP Advanced Photo Paper were pretty good for an office printer, though skin tones were a little on the red side and blue skies tended to indigo. Standalone printing from memory cards (CompactFlash, Memory Stick, SD, MMC, xD) or USB devices is simplified by the LCD display, and limited editing functions are supported in the printer itself.

Colour copies and scans were of good quality, with superior colour matching on our photo test. You can scan to any computer that's running HP's software (PIN protection is provided), or via a browser using the webscan feature. Dedicated buttons control scanning to a shared folder (eg. for scanning all incoming paper documents) or to email.

The 8500 works as a standalone fax machine and also supports fax sending from Windows and Mac OS X. Incoming faxes can be routed to a local or shared folder — onscreen alerts are supposed to be displayed, but we couldn't get that feature to work reliably.

Stephen Withers

8/10

ViewSonic N4290p

Not bad for a budget TV.

Viewsonic
www.viewsonic.com.au
$1,699

Cheap; stylish; good colours. ✔

Poor SD upscaling; occasional motion judder and image noise. ✖

SPECIAL FEATURES
Built-in EPG
1080/24p
100MHz motion

ViewSonic is famous for its computer monitors and we were interested to see how its new LCD TVs fared. First impressions are very good. The glossy bezel and matte, curved speaker grille make it look understated and classy. The stylish remote is very responsive when operating the TV.

The on-screen menus are well-laid out and simple to follow. The built-in EPG looks good too. Those who like to tinker may be disappointed with the basic image adjustments but we were impressed. It weighs 20kg and is easy to set up and get working thanks to the simple auto-tune feature, which quickly scans all the channels for you.

But it's image quality that counts and we started by playing *The Dark Knight* at 1080/24p through our Sony Blu-ray player. Initially the picture looked great. Blacks were black and good detail was retained in light areas. However, we've got used to 100MHz motion smoothness and it's noticeably absent here. Of similar concern was the amount of detail that gets lost in dark areas: blacks turn black too easily. HD TV looks very good. However, upscaling SD TV is where we've seen many TVs fall down and we weren't impressed. Things were better with DVD playback but there was still judder in some areas.

Connectivity isn't bad. There are four HDMI ports, two component, two composite plus VGA and S-Video. There's also a USB port for playing back pictures and videos from a USB stick. All in all it's a good-value TV with some annoying weak points. It's capable of good quality but aberrations can annoy you during day-to-day usage. Those blinded by the small price tag will like it, but we'd plump for a similarly-priced Panasonic plasma instead.

Nick Ross

7/10

Sony KDL40ZX1

Pricey doesn't mean it's the best.

Sony
www.sony.com.au
$6,399

Super-svelte looks; good HD and SD TV quality; wireless. ✔

Crazy money; not the best top-end image quality. ✖

SPECIAL FEATURES
9.9mm thick
Wireless functionality
100MHz Motionflow

One of Sony's most jaw-dropping products is the ZX1 TV. At a glance, anyone would want one and the specs alone say why: Full HD, wireless and only 9.9mm thick. It gets that thin by using LED and LCD technology that's, up to now, been reserved for VAIO laptops. The thinness means it's also super light at 12.2kg. A base station has all of the requisite ports (including three HDMI) and can beam a 1080i signal up to 20m away. The panel supports 1080p (including 1080p/24) but you can only achieve this by plugging an HDMI cable into the panel. Two 5W speakers are built into the base and are impressively loud, but bass is noticeably lacking when you crank things up.

It's a shame that DLNA networking is missing, as the wireless technology lends itself to playing content from your computer network. Your only hope for playing additional media is via the transmitter's USB port. Other connectors include solitary S-Video, component, VGA and composite ports.

Picture quality for the common viewer is perfectly adequate. There are loads of settings and enhancements to tinker with, but it can't hide from the fact that top wired LCD TVs produce a crisper, less-noisy picture with better contrast. It also struggled with our de-interlacing tests and panning shots: though smooth with the 100MHz Motionflow, they suffered occasional aberrations and flickering. But both HD TV and upscaled SD is very good with few jaggies and good colour.

At this price you can buy far superior LCD TVs, but if you want a classy display that's easy to hang on a wall (and have money to burn), you'll love it.

Nick Ross

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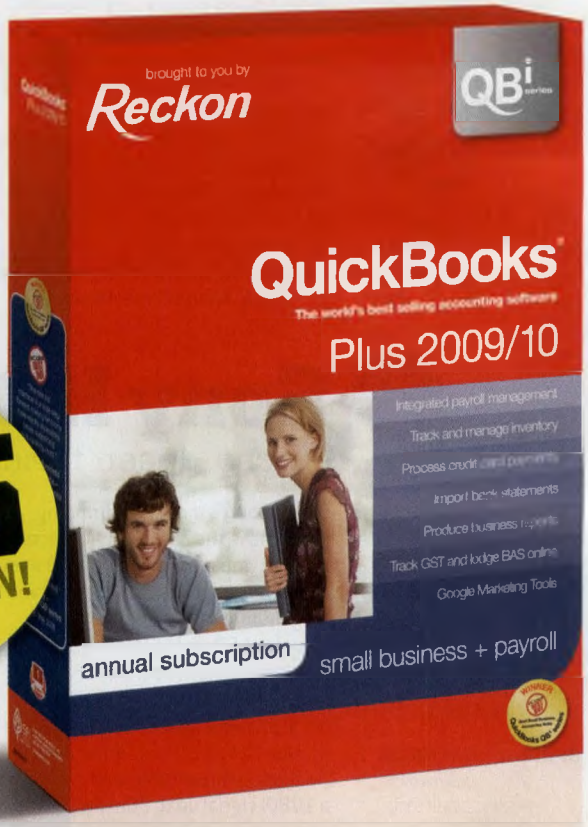

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M907APC

8/10

MobiDTV Extreme!

Ignore the manual.

Radio Parts
www.radioparts.com.au
$49.95

Inexpensive; supports HD TV. ✔

Installation instructions confusing. ✖

SPECIAL FEATURES
BlazeTV
Remote control
Portable antenna

You wouldn't expect much for $50, but with the MobiDTV Extreme USB tuner stick we were pleasantly surprised. The packaging may not be fancy but it's what's inside that counts. The MobiDTV Extreme comes with the USB tuner stick itself, a remote control, a portable antenna, drivers and BlazeDTV 2.5a software. The USB stick is large enough to be able to insert a PAL antenna lead directly into the base without needing an adaptor. The top of the stick has a vent and blue indicator LED when the stick is activated. We're not a fan of the remote as it has those squishy membrane buttons but, then again, it does the job. The portable antenna may be cute but don't expect it to do much unless you happen to be in an optimal signal location where all stations are broadcasting on the upper UHF frequency band.

What really surprised us was the supplied software. You firstly need to ignore the instructions, which are confusing and incorrect anyway. Once you have done that simply load the drivers and software from the supplied mini-CD and scan for channels. The drivers use BDA architecture so you can use your favourite PVR software or the supplied BlazeTV.

BlazeTV itself is worth the money! It does everything that you would expect from more expensive PVR software. You can pause and shuffle live TV, record TV and capture still images. The software uses the broadcast EPG to allow you to schedule recordings, but thankfully you can either manually set or extend the duration of the recording times. The other bonus is that the software also works as a DVD player and supports surround sound audio, displaying real-time audio waveforms (like on an oscilloscope) when listening to DTB-radio.

When you consider what you get, the MobiDTV Extreme USB tuner stick offers outstanding value for money.

David Neiger

9/10

Samsung SPF-105V

Multimedia player — or secondary monitor in disguise?

Samsung
www.samsung.com/au
$399

Powerful multimedia functionality. ✔

Mini Monitor setup difficult to get working. ✖

SPECIAL FEATURES
MP3 playback
Video playback
10.2in screen

If you're in the market for a digital photo frame to display your holiday happy snaps and pictures of the family, there's a lot out there to choose from. The Samsung SPF-105V joins this crowded market with all the usual features like a USB host port for connecting a digital camera or flash drive, multi-format memory card reader, and over a dozen different transition effects for slideshows.

But these baseline features are only just scratching the surface of what the SPF-105V is capable of. Continuing on from the multimedia theme, it can also play MP3s — whether on their own or as the background music for a slideshow — and video files. The spec sheet says it's only compatible with MPEG 1/4 and WMV, so we were surprised to find it played our XviD-encoded episodes of *Heroes* and *Lost* perfectly smoothly.

This extends the SPF-105V's functionality from a simple photo frame to a mini-TV that you can keep on the bedside table for watching videos. The frame's 10.2in display size (with 1,024 x 600 resolution) and excellent viewing angles, brightness and contrast make it perfectly acceptable for this purpose; there's even a headphone jack you can use for connecting external speakers.

The SPF-105V's Mini-Monitor feature sounds impressive, letting you use it as a second display for a Windows XP or Vista computer. Other features include the ability to stream photos from a connected PC over a wireless network, and photo streaming from an RSS feed (which we were able to set up using Flickr).

Jenneth Orantia

7/10

Apple TV

Streaming media for dummies.

Apple
www.apple.com.au
$449

Dead easy to set up and use; supports 720p HD movie downloads.

iTunes only; small HDD; no composite or S-Video outputs.

SPECIAL FEATURES
Connects to iTunes Store
160GB build-in HDD

If ever there was a streaming media device for dummies, Apple TV is it!

We literally took the device out of the box, plugged it in, selected the default language, connected to the wireless network and setup was complete. Integrating the Apple TV with iTunes (on the PC) involved writing down the 5-digit code that appeared on the TV, selecting Apple TV from the iTunes side menu, entering the code and allowing the device to synchronise.

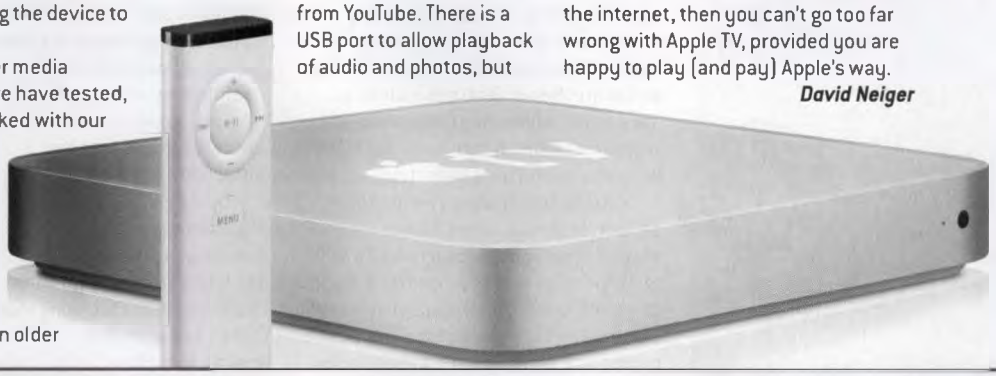
Unlike many other media streaming devices we have tested, the HDMI output worked with our test televisions the first time around, automatically selecting the most appropriate resolution for the type of television. Too bad if you have an older TV because there are no composite or S-Video outputs; it's HD only here!

The device integrates seamlessly with the iTunes store where you can purchase television shows, rent movies (either in widescreen or HD), purchase viewing rights on movies outright and download music and podcasts. Apple TV can also stream content from iTunes running on your PC or Mac as well as play videos directly from YouTube. There is a USB port to allow playback of audio and photos, but it unfortunately cannot be used to expand the storage capacity of the measly 160GB built-in hard drive.

SD content is definitely watchable and is comparable to DVD quality, with some artefacts visible on larger screens. HD content is 720p and looks somewhere between upscaled DVDs and broadcast TV.

If you just want a really easy way to watch legal content downloaded from the internet, then you can't go too far wrong with Apple TV, provided you are happy to play (and pay) Apple's way.

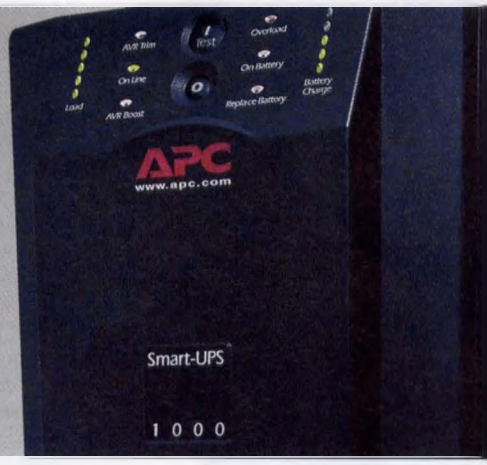
David Neiger



READERS CHOICE 2006

BLACKOUT!

30 MILLION APC CUSTOMERS STILL HAVE POWER. DO YOU?



Think of all that you rely on your computer for: personal and business fi les, financial information, broadband access, videos, photos, music, and more. Increasingly, computers are the hub for managing our lives. And more people rely on APC to protect their hardware and data than any other uninterruptible power supply (UPS) brand.

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Best value battery backup and surge protection for home computers.
8 outlets, DSL protection, 44 minutes of runtime**
Back-UPS® ES650

Home Office $259.99*
Complete protection for home and small business computers.
8 outlets, DSL Protection, 58 minutes of runtime**
Back-UPS® ES700

Small Business $1150.00*
High-performance network power protection with best-in-class manageability for servers.
Smart-UPS® 1000

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APC Legendary Reliability®

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*Recommended Retail Price. **Runtimes may vary depending on load.

8/10

Canon PowerShot D10

It knows when you're blinking.

Canon
www.canon.com.au
$599

✔ Great handling; accurate focusing; 10m waterproof.

✖ Bit chunky.

SPECIAL FEATURES
Dedicated underwater camera
12MP sensor
Stitch-assist panorama

Canon has recently released a confounding mass of near-identical compact cameras, but for once there's something new shining out of the heap. The D10 is Canon's first dedicated underwater camera and follows hot on the heels of competitors from Panasonic and Olympus.

Anyone who's used an IXUS or PowerShot will be aware of Canon's excellent menus and cool features, including stitch-assist panorama and 'colour accent', which lets you keep one colour vibrant while turning others black and white. Newer features include a 'face timer' which only takes a picture when it registers a face — useful for self-portraits — and blink detection.

Key specs include a 12-megapixel sensor, 3x optical zoom, image stabilisation and video up to 640 x 480 at 30fps: all pretty standard for a modern compact. Under general usage it's a solid compact — the lens isn't the sharpest but it's fine for snaps. It's a touch bulky compared with some but it looks good.

The chassis feels very solid and it's waterproof up to 10m, dustproof, freezeproof (to -10C) and shockproof (to 1m). The waterproofing and cold proofing also make it ideal for skiing. Everything is controlled by buttons that are all well-laid out and easy to locate and press, even when submerged.

The 2.5in LCD is bright enough to see clearly in murky water and the shutter is easily depressed at arm's length: useful when underwater.

Each corner provides an ultra-solid socket for detachable leashes.

Quality is similar to the Panasonic and Olympus, but handling, responsiveness, the leash attachments and more-accurate focussing make it the best and most-practical choice.

Nick Ross

7/10

Pentax K-m

Cheap and simple. Just the way we like it.

Pentax
www.pentax.com.au
$1,099 for twin lens kit

✔ Cheap; good quality; easy to use.

✖ Weatherproofing's gone; grip still too small.

SPECIAL FEATURES
10.2 megapixels
Shake reduction
High 3200 ISO

Pentax has tried to go one better, and cheaper, than its popular K200D with the launch of the new K-m. Designed as a first-step DSLR, the K-m utilises simple controls and easy-to-recognise functions that most compact users will recognise. An obvious cost-saving change Pentax has made is the removal of the top mounted LCD screen (which, let's face it, was a bit redundant anyway), allowing it to move most of the controls to the grip-side of the camera for use with the rear-mounted 2.7in LCD screen. Just like compact users are familiar with.

Image stabilisation in the form of Pentax's 'Shake Reduction' technology utilises magnetic forces to vertically and horizontally counteract the camera's minute movements to great effect. Paired with a 10.2-megapixel sensor, the K-m delivers nice, sharp images for the camera's size. A less-sophisticated Auto-Focus system (5 points instead of the K200D's 11 points), still does the job with precision and speed in all but the most demanding of sports photography. It features an upgraded version of the Auto Picture mode, which automatically detects the type of subject or scene and sets the proper shooting mode for the photographer to ensure well-exposed and balanced images.

ISO sensitivity has been extended from 1600 in the K200D to a respectable 3200 in the K-m. Continuous shooting is also faster at 3.5 frames/second with the possibility of shooting in DNG.RAW file format (the only one capable of this in this price range). With a huge selection of shooting modes, and a twin lens kit option to boot, the K-m is smart and simple alternative for anyone new to the DSLR market.

Christopher Zammit

The Striker – NVIDIA's New GeForce GTX 275

After the blow dealt by ATI's Radeon 4800 series, NVIDIA is releasing the GeForce GTX 275 to continue the battle. Let's put it to the test to see how it stands up against competitive SKUs.

Like a never-ending game of cat and mouse, the GeForce GTX 275 is NVIDIA's counter to the Radeon HD 4890. As its name implies, it fills the gap between the awesome (but pricey) GTX 285 and the GTX 260+. It has 240 stream processors and a 448-bit memory bus width; its core is clocked at 633MHz, whereas memory and shaders are clocked at 2268MHz DDR and 1404MHz respectively. In a nutshell, the new GTX 275 is the love child of the GTX 285 and GTX 260+. What's interesting is the nice price point and we'll soon see how this pans out.

MSI N275GTX

MSI's entirely new Twin Frozr cooler featured on the N275GTX series cards utilizes an intelligent PWM dual-fan and five heatpipe design, greatly improving heat dissipation efficiency. The fan speed is automatically adjusted according to the GPU's core temperature keeping noise levels to a minimum under regular load. When core temperatures rise during heavy loads like game play, the fan speed is dynamically adjusted to compensate while still remaining quiet. The MSI N275GTX Twin Frozr is an overclocked version with the GPU clocked at 666 MHz, compared to the standard 633 MHz.

Test Setup

We put the MSI N275GTX through its paces in our Vista test system with the following specifications:

- Intel C2D E8500 overclocked to 4GHz
- Kingston DDR2 -800 4GB
- Asus P5Q-E
- PowerColor HD4890
- WD 6400AAKS
- Windows Vista Ultimate with SP1
  (BENCHMARK RESULTS-1920X 1200)

The cards were tested using the following benchmarks:

- Futuremark 3DMark06
- Futuremark 3DMark Vantage
- Futuremark OpenGL
- Tropics Demo (DX10)
- Crysis Warhead
- Far Cry 2
- Unreal Tournament 3

Benchmark Results

In the last 4 Benchmarks the MSI N275GTX lead the race by a considerable margin against the Radeon HD 4890. The MSI N275GTX recorded scores as much as 15% higher in 3DMark06 and 30% in 3DMark Vantage. On the other hand the HD 4890 scored as much as 30% more in Futuremark OpenGL and also had the advantage in Tropics Demo (DX10).

Judging a winner based solely on Benchmark results would be flawed as the ATI card is getting lower scores in 3D Mark. This could be attributed to a driver problem and given time to develop better drivers more performance may be able to be achieved.

Using Futuremark allows us to monitor the GPU's core temperature in real-time. We started the Xtreme Burning Mode test and Logged GPU Temperature. After 180 seconds the highest temperature of GPU is displayed. As shown in the results table, the highest temperature of both the GTX275 and HD4890 are over 80°C, yet the HD4890 is a little bit hotter with louder fan noise.

3D Game Performance

Going through the FarCry2 built-in Benchmark, we found the GTX275 scored 5% higher than the HD4890 while with Accuview Antialiasing disabled; both cards average around 60 FPS.

Crysis Warhead was tested using the latest FRAMEBUFFER Benchmark Tool (0.32.). Under enthusiast mode, with the map set in ambush the GTX275 final score is slightly higher (5%) than the HD4890.

As the HD4890 is not capable of 1920*1200 resolution testing in Devil May Cry could not be completed. The GTX275 however, (with AA disabled) achieved stable performance of above 120 FPS in scenes 1~3 although scene 4 did not perform quite as well. After running the test 8 times the FPS scores remain above average.

When we use The Last Remnant to test both the GTX275 and HD4890 at 1920*1200 resolution, the GTX275 had a 20% higher FPS than the HD4890 in the end.

In 3D games benchmarks the GTX275 Extreme leads the HD4890 by around 5% ~ 10%. It may seem to be unfair for the HD4890 to be evaluated against the extreme version but both products score similar results in FarCry2 with AA function disabled putting them on somewhat even ground. After running the benchmarks 8 times differences start to become evident with the HD4890 way behind the performance of GTX275, which is not an extreme version.

		GTX 275	HD 4890
Benchmark			
3D Mark06		15252	13926
3D Mark Vantage		5853	4620
FutureMark		3754	4877
FutureMark GPU Burn		80°C	83°C
Tropics Demo			
NoAA		996	1153
8xAA		444	769
PC Game			
Crysis Warhead	NoAA	24.43	23.11
	8xAA	19.16	18.21
Devil May Cry 4		Pass	Fail
FarCry 2	NoAA	61.79	58.63
	8xAA	41.32	31.52
The Last Remnant		98.16	79.90

Overall

MSI's GTX275 extreme is recognized as a good performer; the temperature and noise testing results are better than the HD4890 ATI card. Both NVIDIA and ATI have good Benchmark performances, but NVIDIA has achieved better performance in 3D Mark.

In conclusion, the MSI N275GTX is a good value product, with good over clocking potential (possibility to achieve 280 even 285 performance). However considering the high temperatures reached, >80.C, it is not recommended to over clock the GPU without proper equipment. The GTX275 provides good performance for high resolution gaming and although the market price will be slightly higher than HD4890 it does offer better performance.

NVIDIA.

Vuze 4.2.0.2

6/10

Vuze
www.vuze.com @
Free $

One app for finding, downloading and watching videos. ✔

Relatively poor video playback. ✖

Formerly known as Azureus, Vuze is another all-in-one program for finding, downloading and playing videos. Where Miro is largely focused on civil society, material presented through Vuze is more commercially biased, with commercial movie trailers and music videos especially prominent. You'll also be presented with some advertiser-supported content, along with pay-to-play videos. If you want to cast a wider net than Vuze's own catalogue, the search feature can extend to a range of other torrent sites. Although downloading seemed reasonably fast, the program seemed to react sluggishly to mouse clicks. Windows Task Manager reported that the program was using more than 150MB of memory, which could be a partial explanation. Furthermore, the videos we downloaded played more smoothly in Miro than they did in Vuze. Both programs support full-screen playback. A useful feature is the ability to transcode videos for other devices. Vuze currently supports Apple TV, iPods and the iPhone (all via iTunes), as well as Xbox 360 and PS3. Despite Vuze's efforts to get away from the seedier side of torrents, the mix of material on offer and the ads left us feeling slightly grubby.

Stephen Withers

Miro 2.0.4

8/10

Participatory Culture Foundation
www.getmiro.com @
Free $

One application for finding, downloading and watching videos. ✔

Happy to grab almost all of your disk space. ✖

You could be excused for thinking YouTube and internet video were synonymous. Or that BitTorrent is exclusively used to download unauthorised copies of movies and TV shows. But there is a mountain of free content out there, and Miro is a handy application for finding, downloading and playing it. Perhaps the closest comparison is with a podcasting client such as iTunes. There's a catalogue of material you can subscribe to, the program takes care of the downloading, shows are filed in an orderly manner, and a wide variety of codecs are supported for playback. And if you are after content from YouTube or other video sites, Miro will search and download for you. An important point is that Miro includes a BitTorrent client, so the show creators don't have to meet the cost of distribution through a conventional server. We saw good torrent download speeds with the default setup. The amount of bandwidth used for torrents can be limited, and uploads automatically stopped when a certain ratio is reached. Playback quality depends largely on the source material. A clip that's had most of the quality squeezed out will always look ordinary, but a HD clip will look as good as your hardware allows.

Stephen Withers

Nero 9

6/10

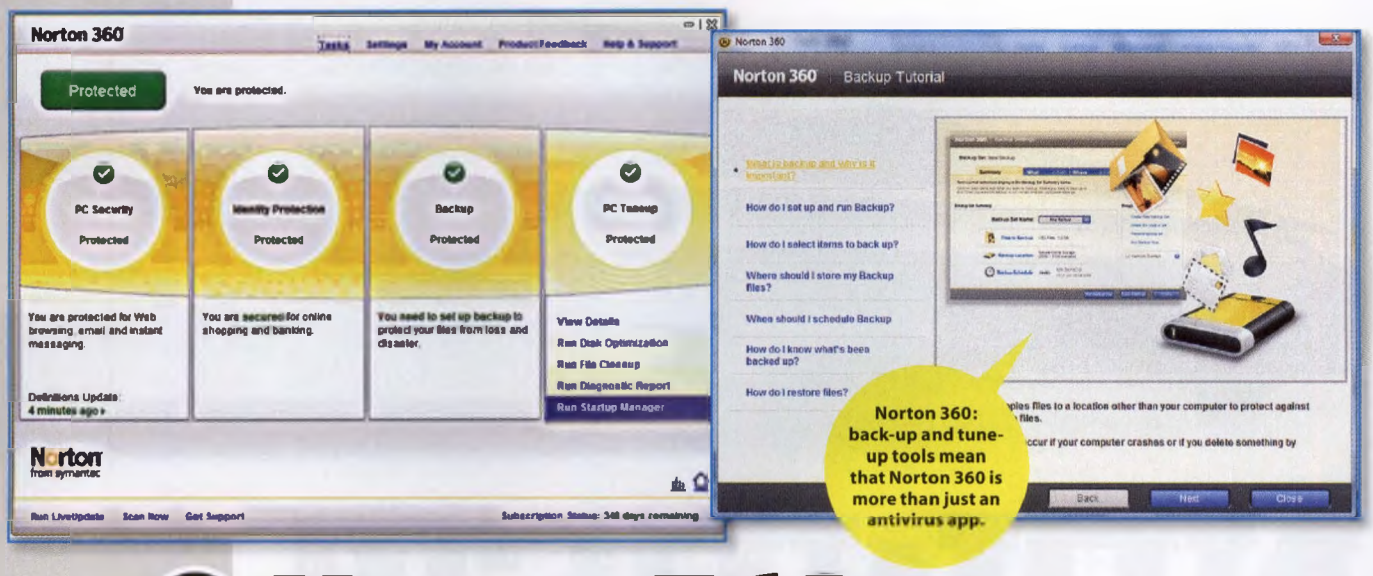
Nero
www.nero.com @
$99.95 $

Supports AVCHD and other HD formats; full media management. ✔

Nearly 2GB download; limited support for solid state media. ✖

With DVD and CD burning software given away with almost every DVD burner, companies have to do more to get you to part with your cash and actually buy software. Nero 9 does this by offering you more, in fact much more, than any supplied burning utility. Included in the package are tools for burning just about every type of optical media, ripping audio from CDs, creating photo CDs, watching and recording live TV (with a compatible tuner card) and backing up your computer (to optical media). There is nothing particularly unique about any of these tools. The advantage of Nero 9 is that all of these tools are in the one package, share a common interface and are easily accessed from the Nero SmartStart centre. Nero 9 (like its predecessor) is now optimised for Vista but unfortunately tends to be a little sluggish to get going. Once loaded, performance is reasonably but by no means zippy. Whilst there are lots of tools and improvements under the covers (such as support for AVCHD and Blu-ray) the package doesn't look that much different from Nero 7. If you have a really old version of Nero and want to take advantage of bug fixes and support for Vista by all means get it, but we couldn't see any wow factor that would make you want to hand over your credit card and upgrade.

David Neiger



8/10

Norton 360 All-In-One Security

Can Norton's latest make people take threats seriously?

Symantec
www.symantec.com.au
$130

✔ Comprehensive; free online back-up space; anti-phishing.

✖ Some items superfluous; warns against using Window's firewall.

SPECIAL FEATURES
All-in-one security solution
System tune-up apps

It's useful to think of Microsoft's free automatic update service as a digital immunity booster shot, while third-party security software is more like an antibiotic. Some products guard against specific infections, while others, such as Norton 360, offer a more comprehensive form of protection. Norton 360 3.0 is a comprehensive package stuffed full of tools to protect your PC from harm. The main menu is divided into four areas: scanning, ID protection, online backup and system tuning.

As the underground economy grows inexorably, the reason for infecting massive numbers of computers is changing fast. Malware used to be about causing havoc. These days, however, your computer is a valuable resource for criminals of all kinds. The last thing they want to do is draw attention to themselves by overtly trashing your data. Stealthy, well-written trojans and low-impact botnet clients may remain undetected by the unprotected home user until it's far too late. Collecting identities to sell on is now seen as a regular 'job' in the underground online economy, and such information is harvested for trade on an industrial scale. For those complacent enough to go shopping online while infected, the shock of an empty bank account will serve as disturbing but effective proof that security software is an essential part of a healthy online life.

Identity theft is a fast-growing crime, and Norton's Identity Protection section provides decent protection. 360 also gives you instant anti-phishing reports on links you might click. Unlike IE8's similar feature, this is fast and effective.

The sophistication of malware is also increasing rapidly. Click on a link in a malicious email and the attack site it sends you to may infect you with a keylogger to siphon off your personal details, a botnet client to force your machine to participate in distributed denial attacks or a P2P client to serve illegal content. It's a big deal, too: the amount of traffic that can be generated by today's botnets can easily swamp the digital infrastructure of a small country.

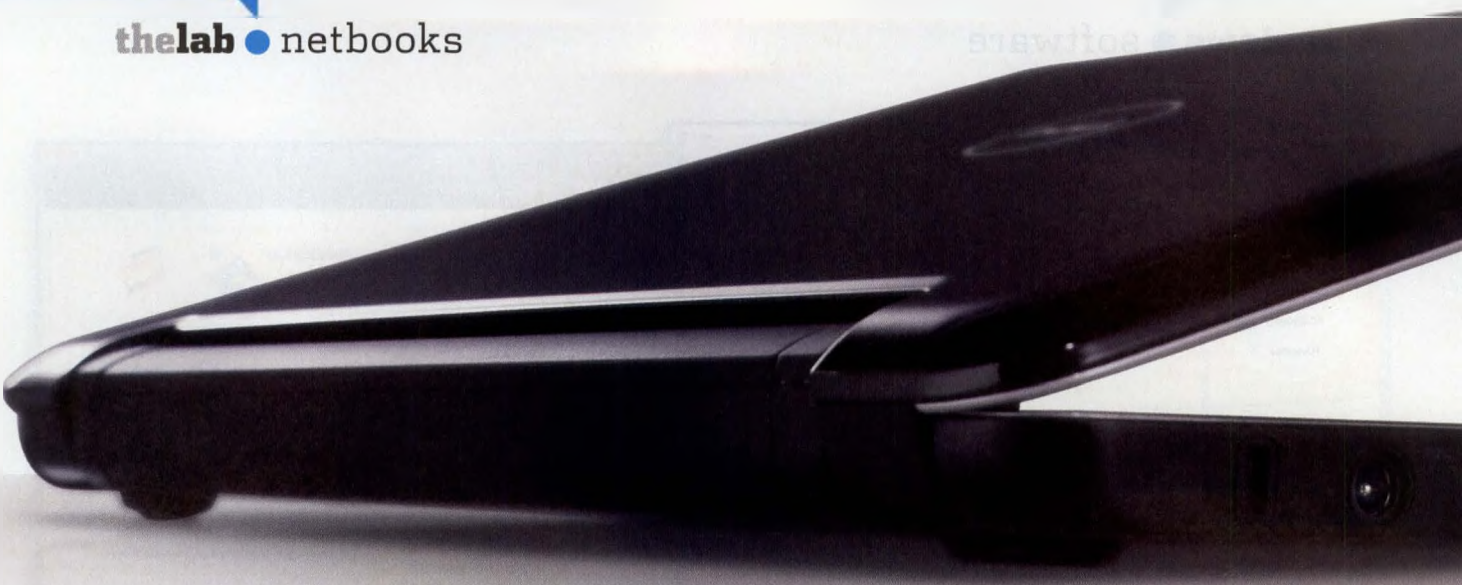
Norton's anti-malware protection covers the usual virus, spyware and adware protection categories, but some items seem superfluous. For example, the Smart Firewall sees you "protected from intrusions", so what does the Intrusion Protection module do?

To combat online crime's ever-increasing level of sophistication, Norton 360 seeks to provide home users with a one-stop shop for all their security needs. This is a sprawling package that will take some time to fully appreciate and, to an extent, it brings together and replaces the offerings of smaller, dedicated companies. However, if having to install and maintain a range of products is the reason why some people still aren't protecting themselves adequately, this is a laudable approach to the problem.

We have some slight niggles with the way the product works, though. It warns against using Windows' own firewall instead of working happily in conjunction with it, for example. Also, you have to create a backup before you can run a full system scan, and the help system requires the installation of Adobe Air.

The inclusion of a selection of PC tune-up tools (including a disk defragmenter) may seem like an attempt at muscling in on the core business of specialised tune-up software vendors, but then a faster machine is also a good reason to have comprehensive protection.

Jon Thompson



NEWEST NETBOOKS

What's the best bang for your buck when it comes to netbooks? **Jenneth Orantia** investigates.

UNDER REVIEW

ASUS Eee PC 1000HE

BenQ Joybook Lite U101

Dell Inspiron Mini 12

HP Mini 1000

Kohjinsha SX3KP06MS

Lenovo IdeaPad S10

MSI Wind U115 Hybrid

It wasn't all that long ago that your only option for checking email and surfing the web on a portable device was by purchasing a smartphone or a PDA (remember those?). Now, the same amount of money will get you a full-blown computer in the form of a netbook.

There are three main things that separate a netbook from a standard computer: price, performance and portability. The very first netbooks debuted at a bargain basement pricetag of $499, but with later models sporting larger screens, bigger hard drives and better battery life, the price has gradually inched up to between $700 and $1,000.

Performance-wise, netbooks are best thought of as junior notebooks. As they use single-core netbook-specific processors (typically of the Intel Atom or VIA C7-M variety), they're not as powerful as laptops of the same clock speed and, as such, run Windows XP Home Edition ULCPC (Ultra Low Cost Personal Computer) rather than the more demanding Windows Vista. The trend of netbooks running Linux seems to have waned in favour of a standard XP install, although you can still find a few models sporting various custom Linux distros for cheaper than the equivalent Windows versions.

And then there's portability. Next to the low pricetag, the ultra-mobile form factor is what has kept netbooks selling like hotcakes while the market for PCs in general has declined. Netbooks typically weigh just over a kilogram, but if you want one with a six-cell battery, you can expect an extra two- or three-hundred grams on top of that. The additional weight is worth it if you want to use it for a decent stretch away from a power socket — while three-cell batteries can fit in anywhere from two to four hours of web browsing at a wireless hotspot, a six-cell will get you four to nine hours.

What do I look for?

In a good netbook. . .

Thinking about plonking down your hard-earned for a netbook? Make sure you're clear about their strengths and limitations before buying. If your main computer activities consist of web browsing, checking email, streaming YouTube clips and occasional file downloads, a netbook is an ideal machine, but there are still a few things to be aware of.

USB PORTS

Netbooks have a minimum of two USB ports, but if you've got a lot of devices and accessories to plug in, check for models with three.

SCREEN

All netbooks will look fine when viewed on a flat surface, but if you'll regularly use it on your lap or share the screen with other people, check that you can see the display clearly from other angles.

SOUND

Multimedia isn't a big priority on a netbook, but they're an ideal size to use as a portable media player, so check the speakers are loud enough for personal use.

BATTERY

Netbooks with a three-cell battery tend to be lighter, but if you want to use it for longer periods sans charger, opt for one with a six-cell battery.

KEYBOARD

A good-sized keyboard can make a big difference if you do a lot of typing, so look for netbooks with a keyboard that's 92% the size of a full one.

PRICE

Don't assume that cheap pricetag means cheap build — if looks are important, there are a few netbooks that look like they're worth twice as much as they sell for.

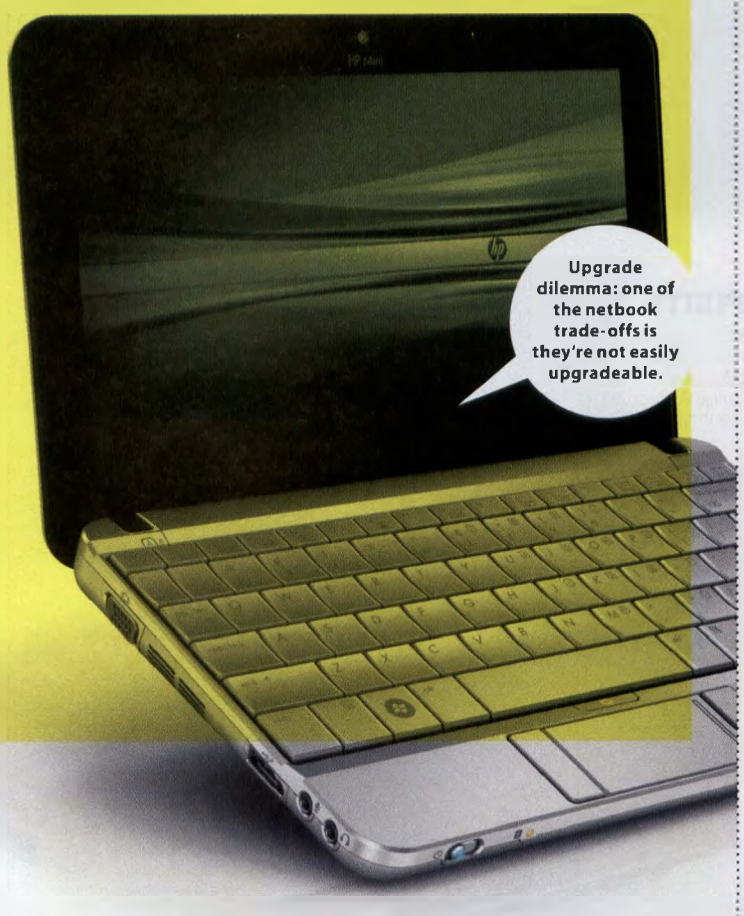
WHEN TO BUY

Netbooks tend to a have maximum 10in screen size (the Dell Inspiron Mini 12 is currently the only exception) with a resolution of 1,024 x 600, and while it's a comfortable formula for extended viewing, you won't be able to fit as much on the screen (such as two maximised windows side by side) as you can on a regular laptop. There are also some programs that assume a minimum screen resolution of 1,024 x 768, so check first that all of your software is compatible with a netbook's screen size.

If your needs change and you find yourself needing more oomph from your machine, you'll find that netbooks aren't as upgradeable as a standard laptop. Only a few in this roundup let you upgrade the RAM, as most of them have the chips soldered onto the motherboard to save on space. The hard drive is also usually hard to get to due to how closely all of the components are packed together.

Due to their small size, netbooks are also limited when it comes to inputs and outputs. 802.11b/g (and sometimes 'n') Wi-Fi, Bluetooth and Ethernet are all to be expected, as are at least two USB 2.0 ports and a memory card reader, but you won't find any optical drives, HDMI ports, PC Card slots or biometric fingerprint readers in sight.

If your computing tasks extend to gaming, graphics or video editing, or anything else that demands a powerful processor, you can cross a netbook off your list — with one exception. A netbook's highly affordable pricetag makes it an attractive option as a second notebook for travel and light use.



- 1.6GHz INTEL ATOM N280 PROCESSOR
- 160GB HDD
- 10GB FREE ONLINE STORAGE
- 9.5-HOUR BATTERY LIFE

APC MAGAZINE apc EDITOR'S CHOICE

$899

9/10

ASUS Eee PC 1000HE

@ www.asus.com.au

✔ Extra-long battery life; can underclock and overclock the processor

✖ Heavy; thick.

ASUS has been in the netbook game for longer than any other vendor, and this wealth of experience shows in one of its latest Eee PC variants, the 1000HE. It's not any smaller or lighter than the original 1000, but ASUS has tweaked and optimised this model to incorporate better battery life and a superior keyboard.

One of the 1000HE's main claims to fame is its 9.5 hours of run time. This is probably achievable with Wi-Fi turned off, but in our web browsing run-down test and power saving mode enabled, we achieved 7 hours and 15 minutes — still a great score, considering a netbook's average run-time with a six-cell battery is five hours.

There's a lot on offer to differentiate the 1000HE from other netbooks. It's the only machine in this roundup to use the latest 1.6GHz N280 Intel processor, and the Super Hybrid Engine utility lets you choose from four different power modes for overclocking and underclocking it to achieve faster performance and better battery life respectively. Speeds range between 1.25GHz to 1.75GHz.

There's also a dedicated display button that lets you switch between different screen resolutions (including a handy 1,024 x 768 compressed mode) from the native 1,024 x 600, 10GB of free online storage that integrates seamlessly into Windows folders, and a multi-touch trackpad not unlike the one offered on the Apple MacBook.

Another similarity to the Apple design is the raised Scrabble-tile keyboard, which is 92% the size of a standard laptop keyboard and exhibits a nice springy typing action. The trackpad and mouse buttons are generously sized, but the latter are stiff and require a firm push to use. The Eee PC 1000HE doesn't look or feel like a cheap machine, but the downside is that it's considerably thicker and heavier than the other netbooks, measuring a beefy 3.5cm at its thickest point and weighing a considerable 1.45kg. Still, the extra-long battery life and other luxury amenities make the additional weight and bulk worth it.

- 1.6GHz INTEL ATOM N270 CPU
- 160GB SATA 5,400RPM HDD
- 3 USB 2.0 PORTS
- 5.3-HOUR BATTERY LIFE

$699

BenQ Joybook Lite U101

7/10

@ www.benq.com.au

✔ Affordable; four colour options; three USB 2.0 ports.

✖ Tacky hardware design; disconcerting fan noise.

'You get what you pay for' is usually a pretty safe maxim when it comes to technology, and if that were strictly the case with netbooks, we'd be perfectly happy with the Joybook Lite U101. But with so much competition in this space and all of the entrenched vendors working hard to improve on design and innovation with each new model, we can't help but feel that newcomer BenQ's offering is a case of too little, too late.

Not that there's anything inherently wrong with the Joybook Lite U101. It offers the standard spec 1.6GHz Intel Atom N270 processor, 1GB of RAM, Windows XP Home Edition, three USB 2.0 ports and a 160GB 5,400rpm hard drive (split into 40GB and 120GB partitions), and the bundled six-cell battery yields a decent five hours and 20 minutes of battery life when web browsing over Wi-Fi.

But there's an overwhelmingly toy-like feel to the Joybook Lite U101 that we didn't get with the identically-priced Lenovo IdeaPad S10. The glossy lid comes in a variety of colours (white, black, pink and blue), but the pattern — which consists of all the letters spelling Joybook Lite running diagonally — looks pretty low-rent, and the tactile feedback on the power button and mouse buttons left us wanting.

We also found the fan noise — which kicks in when you're multi-tasking — to be more than a little distracting. It would alternate between an odd whooshing and a sound that resembled white noise.

Still, there are reasons to pick the Joybook Lite U101 over the Lenovo IdeaPad S10. If you don't mind the silly pattern on the front, it has two extra colour options (pink and blue) over the S10, the touchpad is larger, it's got three USB 2.0 ports and the six-cell battery offers an extra hour's worth of run-time.

- 1.33GHz INTEL ATOM Z520 CPU
- 12.1in 1,280 X 800 DISPLAY
- 30GB HARD DRIVE
- 3 x USB PORTS

$899

Dell Inspiron Mini 12

7/10

@ www.dell.com.au

✔ Large 1,280 x 800 resolution; light carry weight; slim dimensions.

✖ Feels cheap; short battery life; small hard drive.

Is a machine with a 12in screen too large to be a netbook? That's the question that the Inspiron Mini 12 poses. It's the first so-called netbook with a 12in screen and laptop-spec 1,280 x 800 resolution, but it's got the same price, processor, operating system and build quality of a netbook.

Its large display may very well tip it over the line into notebook territory — indeed, Dell classes it as a laptop on its web site, despite the Mini 12 forming part of the company's designated netbook line. But its look and feel is undeniably that of a netbook. By that we mean it comes across as cheap. The lid is a fairly attractive glossy black, but overall it feels tacky to use.

Still, there's plenty to recommend the Mini 12 if you're shopping for a netbook. There are lots of entry-level notebooks available with better specs for the money, but you won't find any with the Mini 12's slim dimension and ultra-light carry weight. It's thinner than most other notebooks, and it's even lighter than the MacBook Air (not to mention two grand cheaper) at 1.2kg.

The other major perk is its 1,280 x 800 resolution. With most other netbooks stuck at 1,024 x 600, the Mini 12's generous display makes it far more comfortable to use for extended periods. The only downside is that it's not so good for watching movies on. While streaming video clips on YouTube and watching movies stored locally on the 30GB hard drive, we noticed a distinct flicker in the middle of the display, and we could also see visible pixilation when watching movies full screen.

Like the HP Mini 1000, the Inspiron Mini 12 only comes supplied with a 3-cell battery, but there's currently no option to buy an extended battery. We'd advise waiting to see if one becomes available — with the standard 3-cell, you're limited to a measly two hours of web browsing over Wi-Fi.

- 1.6GHz INTEL ATOM N270 CPU
- 80GB HDD
- 2 x USB 2.0 PORTS
- 1.09KG WEIGHT

APC MAGAZINE HIGHLY RECOMMENDED apc

$799

8 10

HP Mini 1000

@ www.hp.com.au

✔ Stylish hardware design: excellent keyboard: powerful speakers.

✖ Short battery life; limited screen movement.

The Mini 1000 may be in the same price range as all the other netbooks, but it sure doesn't look it. With its slim dimensions, eye-catching all-black chassis, and flush 10.1in widescreen display, it looks more like a premium ultra-portable than a budget netbook.

This impression of quality extends to day-to-day usage. The Mini 1000's keyboard is a joy to use, with a soft rubberised finish on the keys, trackpad and mouse buttons and a layout that's 92% the size of a full keyboard. Typing action is buttery soft, and for the most part there aren't any irregularly-sized keys to trip up touch typers.

HP's concession to allocating lots of room for the keyboard is a smaller touchpad, with buttons that flank the left and right hand sides of it. Unlike some of the other netbooks, however, we didn't find ourselves running out of room very often on the touchpad, and the side-mounted mouse buttons only took a short while to get used to.

The 10.1in display looks stunning due to its glossy coating, flush design and LED backlight, but it does have its limitations. First, its resolution is 1,024 x 576, which falls short of the netbook standard of 1,024 x 600.

What this means in real-world terms is that you'll lose a few lines at the bottom of the screen when viewing web pages and Word documents. Second, the screen can only be pushed back approximately 120 degrees — which is fine for when it's sitting on a desk, but limiting if you've got it on your lap.

But the Mini 1000's main limitation is short battery life. It only ships with a 3-cell battery as standard, and using our Wi-Fi browsing run-down test, we were only able to squeeze two hours and forty minutes out of it. HP offers a 6-cell battery as an optional extra for $163, but that's a big ask considering most of the other netbooks offer one as standard.

- BUILT-IN DVD SUPER MULTI DRIVE
- RUNS WINDOWS VISTA
- ACTS AS A TABLET PC
- 985G WEIGHT

APC MAGAZINE HIGHLY RECOMMENDED apc

$2,199

8 10

Kohjinsha SX3KP06MS

@ www.tegatech.com.au

✔ Built-in DVD player; convertible tablet form factor; good performance.

✖ Expensive; takes a while to boot and resume.

The Kohjinsha is yet another example of where the definition of netbook comes into question. If it's a small machine with an Intel Atom processor, 1GB of RAM, 7-10in display, and weight of around one kilo (985g, in this case), then the Kohjinsha SX Series fits the bill perfectly.

More often than not, though, a sub-$1,000 price is an essential ingredient to the netbook recipe, so the Kohjinsha's exorbitant $2,190 pricetag — over a thousand dollars more expensive than any of the other netbooks reviewed — will probably push this computer over into the luxury ultraportable space. While it's expensive, the Kohinshja justifies its premium pricetag in more ways than one. For starters, it's got a Tablet PC form factor, so you can swivel the 8.9in display 180-degrees and fold it back onto the keyboard to turn it into a slate.

The screen has the same 1,280 x 768 resolution that you'd expect in a much larger notebook, and despite having the touchscreen overlay, it's just as bright and vivid as any of the non-touchscreen displays we've seen. There's also a built-in DVD Super Multi Drive — virtually unheard of in a machine this light — and it comes with Windows Vista Home Premium installed as standard. The Kohjinsha comes with a small stylus that fits into a silo on the right hand side, but it recognises taps on the screen from just about anything. We found it responsive to taps and gestures, but it doesn't employ any form of palm rejection technology (unlike similar Fujitsu notebooks), which means you can't lean your palm on the screen while you're writing. Our experiences with Vista and netbook processors in the past haven't been good, so we were delighted to find that Vista runs extremely well on the Kohjinsha — even with seven tabs in IE8 open simultaneously. It's not as good for video — playing an XviD-encoded episode of *Dollhouse* with VLC, it dropped a lot of frames, but it was still watchable. Booting up also takes a sluggish two minutes, while resuming from sleep takes 17 seconds.

- 160GB 5,400RPM HDD
- EXPRESSCARD 34 SLOT
- BUNDLED 3- AND 6-CELL BATTERIES
- 85% FULL-SIZE KEYBOARD

$699

7/10

Lenovo IdeaPad S10

@ www.lenovo.com.au

✔ Elegant minimalist design; two bundled batteries; affordable pricetag.

✖ Odd keyboard layout, undersized touchpad; relatively short battery life.

The Lenovo IdeaPad S10 ties with the BenQ Joybook Lite U101 as the cheapest netbook in this labs roundup, but thankfully, it doesn't share the latter's cheap-looking design. There's nothing flashy or eye-catching about the IdeaPad S10, but its simple lines, sturdy construction and compact footprint give the impression of a good-quality netbook.

As expected for an entry-level model, there's nothing exceptionally distinctive about the S10 save for its affordable pricetag. But there are a few features worth noting: the 160GB hard drive spins at 5,400rpm (an improvement over the standard 4,200rpm drives used in other netbooks), it comes with an ExpressCard 34 slot, and the box includes both a 3-cell and 6-cell battery.

The 85% full-size keyboard has a nice, bouncy feel to it, but the layout is the quirkiest of all the ones we tested. The Tab key is comically skinny, there's a Home button instead of a Windows button, the right-hand Shift key is smaller than normal, and the Function and Ctrl keys on the left side are in reverse order. The touchpad is worse, with hardly any room to manoeuvre your finger — Lenovo would've done well to borrow the famous touch pointer from its ThinkPad line of notebooks instead.

The faster hard drive comes at the expense of shorter battery life. The IdeaPad S10's run-time rated the lowest of the 6-cell netbooks we tested at a total of four hours, and while you can add another two hours to this by lugging around the 3-cell battery, we'd rather have the whole six hours of run-time wrapped into a single battery — even if it meant opting for the slower 4,200rpm hard drive. Another thing we'd swap is the ExpressCard slot for another USB port; while it's a nice point of differentiation, there aren't many accessories in ExpressCard format and literally hundreds that you can connect via USB.

- 1.6GHZ INTEL ATOM Z530 CPU
- 160GB HDD
- HYBRID HDD AND SSD
- ALL-DAY BATTERY LIFE

APC MAGAZINE HIGHLY RECOMMENDED

$999

8/10

MSI Wind U115 Hybrid

@ www.msicomputer.com.au

✔ Phenomenal battery life; snappy performance; lots of storage.

✖ Quirky keyboard; a few design faults; bland appearance.

If long battery life is your number one priority in a netbook, look no further than the MSI Wind U115 Hybrid. It gets its name from being the world's first hybrid storage computer, with a 160GB hard drive and 8GB SSD, and it claims a remarkable 12 hours of run-time with the included 6-cell battery. Naturally, real-world figures are shorter, but the nine hours of web surfing over Wi-Fi we were able to pull off is still phenomenal for such a cheap machine. MSI pulls this camel-like battery life off thanks to a combination of its 1.6GHz Intel Atom Z530 processor — which consumes half a watt less than the Atom N270 processor — and the unique ECO mode that switches off the power-hungry hard drive. As Windows XP is installed on the SSD, performance is also extremely snappy — we were able to have seven tabs open in Internet Explorer 8 with no lag or lock-ups (the sweet spot for most other netbooks is five tabs), and booting into Windows and resuming from sleep took a speedy 5 seconds and 39 seconds respectively.

That aside, the U115 is pretty much identical to the original U100. It sports a bright 10in 1,024 x 600 LED-backlit display, a near-full-sized keyboard, and a 1.3-megapixel webcam. We do wish that MSI had tweaked the keyboard design, though. The highly-trafficked comma, full stop and question mark buttons are still undersized, which means touch-typists will inevitably hit the wrong keys, and the Function and Ctrl buttons on the left are reversed. Plus, the touchpad is more square-shaped than rectangular, so we kept on running out of room horizontally. We also ran into a few design faults: the hump created by the battery at the bottom meant the U115 would rock back such that the lip of the machine wasn't touching the table, and the loose display hinge meant the screen would fall back whenever we picked it up. The battery indicator in the system tray is also extremely unreliable, jumping back and forth an hour within seconds of checking it.

BROADBAND ON THE GO

Jenneth Orantia goes on the road to test wireless broadband solutions.

Wireless broadband offers many advantages over the traditional 'wired' net connections. If you don't have a landline (and don't plan on getting one just for the sake of ADSL), going down the wireless path is more efficient — all you need is a spare USB port on your computer. The other main perk is portability. As the modem consists of a USB dongle not much larger than a flash drive, you can chuck it into your laptop bag and use it whenever you need net access.

PREPAID INTERNET

A relatively new development in the last year is the addition of prepaid broadband, which works the same way as prepaid mobiles. Starter kits begin at $129, which includes the USB modem and a bundled amount of data, and you simply recharge your account whenever you run out of data or the voucher has expired. This is in contrast to most of the postpaid data plans, which charge you an excess usage fee per megabyte when you go over your data cap. Most of the prepaid top-ups expire within the standard 30-day timeframe, but some of the carriers offer longer time periods for the larger data bundles — something that you don't get on the postpaid plans. Virgin, for instance, lets you use up the 6GB in its $100 plan over three months, while 3 offers a unique $149 plan that includes 12GB of data that you can use over a whole year — ideal for infrequent users that like to keep a wireless broadband card around 'just in case'. Yet another advantage that prepaid has over postpaid is that most carriers will rollover any data that you haven't used into the next month, provided that you recharge your account before the data expires. But there's a limit to how much data they'll carry over — Vodafone limits it to 5GB, while Virgin's limit is 10GB and 3's 15GB. There's also usually a limitation on how much data you can buy in a month — typically 10GB.

POSTPAID PERKS

Naturally, the carriers would rather tie you into a lengthy contract, so there are tempting perks for signing on the dotted line. Postpaid plans always offer more data compared to prepaid. As an example, 3's $49 postpaid plan offers a generous 7GB cap — the same money on 3's prepaid system will only get you 4GB. Carriers also typically bundle

UNDER REVIEW

3 Mobile Broadband

Internode NodeMobile 3G

Optus Wireless

Telstra Next-G Wireless

Virgin Wireless

Vodafone Mobile Broadband

the cost of the modem into its more expensive plans, and a couple of the services offer subsidies if you bundle it with a landline or mobile phone service. Virgin, 3 and Vodafone are offering three free months on certain plans, while Telstra is offering half-price plans for the first year of the contract and a modem rebate of $299 if you sign up for a 3-year contract.

If excess usage fees have turned you off postpaid plans in the past, it's worth pointing out that Virgin, Internode and Telstra (for its two high-end plans) don't impose them. Virgin shapes your speed back to 128Kbit/s for the first 250MB that you go over your data cap. After that, you can buy up to three data top-ups ($15 for 500MB) per month to tide you over until your next billing cycle. Internode skips the shaping and simply directs you to a portal to buy more data blocks once you've exceeded your cap, while Telstra doesn't let you buy any extra data at all — your connection speed is simply wound back to a snail's pace of 64Kbit/s.

Another point is that postpaid doesn't necessarily equate to a fixed term contract. The big three carriers (Telstra, Vodafone and Optus) only offer their postpaid plans on 2-year contracts, but the rest let you sign up on a monthly basis, provided you buy a modem outright or supply your own.

COVERAGE IS KEY

Wireless broadband services use the same 3G/HSDPA networks as mobile phones, so it will work indoors, outdoors, and in moving vehicles. On the flip side, it's also prone to the same blackspots and spotty reception as a mobile.

If you live in the metro areas of a major city, you shouldn't have any problems getting reception, but it's worth checking that your area is covered by consulting the coverage maps of each network. Telstra, Vodafone, Optus and 3 use their own networks (although 3 roams onto Telstra's 3G and GSM networks outside of its coverage area), while Virgin and Internode piggyback on Optus' 3G network.

3's postpaid and prepaid plans offer the best value out of all the services we tested, but its network coverage isn't as broad as the other providers. Technically, it supports both 3.6Mbit/s and 7.2Mbit/s connections, but our test modem only connected at the slower

BROADBAND PLANS

PREPAID PLANS

	150MB	225MB	300MB	500MB	625MB	750MB	1GB	2GB	3GB	3.5GB	4GB	6GB	12GB
Telstra	$20	$30	$40		$50	$60				$80		$100	
Virgin				$15			$30		$50*			$100	
Vodafone				$19			$29		$39				
Optus				$15^			$30	$40	$50		$70*	$100*	
3				$15				$29			$49		$149

Data expiry date is 30 days unless indicated otherwise. ^Data expires after 15 days. *Data expires after 60 days. #Data expires after 12 months.

POSTPAID PLANS

	200MB	250MB	1GB	2GB	3GB	5GB	6GB	7GB	10GB
Telstra	$29.95		$59.95			$89.95			$129.95
Internode		$14.95			$39.95				
3			$15	$29*	$29		$39	$49	
Vodafone			$19.95			$39.95			
Virgin~			$19	$29		$39			
Optus^				$39.99		$49.99	$59.99		

* This includes the USB modem for free. ^ Monthly rate is $10 cheaper if you bundle it with another Optus postpaid service. ~ Monthly rate is $5 cheaper if you bundle it with another Virgin postpaid service.

3 offers the best bang for buck, but be aware of the limited coverage available.

3.6Mbit/s speeds. 3 recently made a deal with Telstra to offer cheaper roaming outside of its Broadband Zones, but you still have to pay 50c a megabyte for the privilege.

The 3G network speed doesn't tell the whole story, though. This is the theoretical maximum download speed that the network would deliver under optimal conditions, but real-world performance is typically a lot slower once you factor in latency, which is the time delay between entering a URL into the web browser and the page actually loading. This can be affected by lots of different variables like network congestion and your distance to the nearest cell tower, so your upload and download speeds can vary depending on the time of day and your location. Carriers typically advertise their speeds in kilobits (Kbit/s) and megabits (Mbit/s) per second, whereas you're probably used to measuring data in kilobytes (KB) and megabytes (MB) as that's how a PC measures data. This means the impressive 300Kbit/s to 1.5Mbit/s real-world speeds that many of the networks advertise are actually only 37.5KB/s to 192KB/s.

READ THE FINE PRINT

As with any type of contract, there are hidden traps in the fine print to be wary of. Virgin's postpaid service offers a great mix of value and performance, but if you download a lot of files through BitTorrent, the cap on peer-to-peer traffic to 32Kbit/s will more than likely rule it out as a contender.

The data in Vodafone's prepaid service is calculated in 1MB increments, which deviates from the usual practice of charging per kilobyte, but Optus — who charges in 10MB increments for its prepaid service — is an even bigger offender in that regard.

3 users would do well to opt for the E160 Mega Modem over the E180 or the MF627 modems, although the differences between the three aren't properly explained on the web site. The E160 is currently the only modem that supports 3G roaming onto parts of Telstra's 850MHz network. The other two modems can do it too, only at the slower 2G speeds.

What do I look for?

In wireless broadband...

It's important to make sure that the provider you choose has good coverage for the areas you are most likely to use it. Some providers can charge extra when outside their zones. Then it's a matter of choosing a service based on your usage, speed requirements and what you're willing to pay.

COVERAGE

Check that the places you intend to use the wireless broadband service are covered by the provider's network. All of the carriers have coverage maps on their web sites.

M/BITS

The 3.6, 7.2 and 21Mbit/s advertised network speeds only tell half the story: real-world testing is much slower and varies depending on your location, network congestion and other factors.

SPEED

Make sure the real-world speeds are adequate for what you need the service for. For email and web browsing, any of the services are fine, but for higher-bandwidth applications, Telstra offers significantly faster speeds.

PLANS

If you want the most data for the least amount of money, you're best off with a postpaid plan. If you're a prolific downloader, check for plans that don't impose excess usage fees. Infrequent wireless broadband users should look for a prepaid account that offers longer expiry dates.

- ROAMS ONTO TELSTRA'S 850MHz 3G NETWORK
- 60% POPULATION COVERAGE
- PLANS START AT $15 FOR 1GB
- 3.6MBIT/s NETWORK

$129

7/10

3 Mobile Broadband

@ www.three.com.au

✔ Highly affordable; lots of plans to choose from; decent download speeds.

✖ 50c per MB roaming charge outside of 3's Broadband Zones.

If you're after the best bang for your buck, look no further than 3's Mobile Broadband service. Paying the $129 cost of the modem up-front lets you sign up for a month-to-month contract and benefit from the cheapest one-gigabyte plan at $15 a month. Moving up, 3 offers 3GB for $29 and 6GB for $39, with a 10c per megabyte excess usage fee.

Signing up for a 24-month contract gets you extra perks: you can pay off the modem at $5 a month on the $15 and $29 plans, the modem is free on the $39 plan, and an extra $49 plan is available where you get 7GB a month and a free modem. You also get the first three months free on the $29 and $39 plans.

The tradeoff for the cheaper rates comes in less coverage and slower network speeds when using the E160 Mega Modem. 3's coverage is limited to 60% of the Australian population, spanning the greater metro areas of Sydney, Melbourne, Brisbane, Perth, Adelaide, the Gold Coast, Canberra, Wollongong and Geelong. Outside of that, a feature exclusive to the E160 is that you can roam onto Telstra's 850MHz 3G network for 50c a megabyte (older modems can only roam onto the 2G network).

Despite only being connected at 3.6Mbit/s, we found the E160 compared favourably to the faster 7.2Mbit/s modems. We were able to consistently get around 110KB/s for downloads (faster than Internode) and 30KB/s for uploads.

The E160 is also available prepaid in the $129 starter kit, which includes 100MB of data. Unique to 3 is a $149 recharge amount that includes 12GB of data that you can use over 12 months.

- PIGGYBACKS ON OPTUS' 7.2MBIT/s 3G NETWORK
- 96% POPULATION COVERAGE
- PLANS START AT $14.95 FOR 250MB
- NO EXCESS USAGE FEES

$199

7/10

Internode NodeMobile 3G

@ www.internode.on.net

✔ No excess usage fees; a few extras.

✖ No prepaid plans; slower than the other 7.2Mbit/s services.

Internode is the new kid on the block when it comes to wireless broadband, sharing its network with Virgin and Optus. Unsurprisingly, it offers near-identical upload and download speeds to Virgin: 41KB/s and 100KB/s respectively.

Internode has kept things extremely simple with its plans: there are no prepaid options, and the postpaid plans consist of a 250MB plan for $14.95 a month and a 3GB plan for $39.95 a month. The modem costs $199 up-front, and existing Internode customers can get it for free if they sign up to a 24-month contract.

Like Virgin, there are no excess usage fees for going over your limit, but rather than shape your network speeds back, Internode redirects you to a webpage where you can buy mobile data blocks to tide you over to the next month: $10 for 250MB, $20 for 500MB or $40 for 1GB. Or, you can just sit out until the next billing cycle starts.

Internode throws a few extras in to sweeten the deal, including five free email accounts, 50MB of webspace and a backup dialup account that you can use for $1 an hour. We're not sure how much sway these will have, though, given the abundance of email providers, web storage and wireless networks that are currently on tap for free.

Those familiar with Internode's extensive unmetered content selection (which includes numerous download mirrors and Steam game servers) will be disappointed to know that this feature isn't offered for the company's wireless broadband service. One feature that the company's working on including at a later stage is static IP addresses, but otherwise there's really nothing available here that you can't get faster and cheaper elsewhere.

- 7.2MBIT/s NETWORK
- 96% POPULATION COVERAGE
- PLANS START AT $39.99 FOR 2GB

$199

6/10

Optus Wireless Broadband

@ www.optus.com.au

✔ Fast upload speeds; competitive prepaid plans.

✖ Prepaid data charged in 10MB increments.

Like its Telstra and Vodafone counterparts, the Optus postpaid Wireless Broadband plans are only available on a fixed term contract: in this case 24 months. Although Virgin and Internode both use Optus' 3G infrastructure for wireless broadband, Optus' plans are actually more expensive: $39.99 for 2GB, $49.99 for 5GB and $59.99 for 6GB, plus the cost of the modem ($199 up-front or $8 per month).

If you bundle the plan with another Optus service, you get $10 off the monthly charge, but even there the equivalent Virgin plans work out a dollar cheaper, with the added advantages of not having to be tied into a two-year contract or worrying about excess usage charges (Optus charges 15c per excess megabyte).

The main thing Optus seems to offer over the other carriers that piggyback on its network are superior upload speeds; our tests yielded 160KB/s for uploads, and an (oddly) slower average download speed of 130KB/s.

Optus is a lot more competitive when it comes to its prepaid wireless offerings. The $149 starter pack includes the E160E USB modem and 200MB of data, but if you sign up before June 30, you get 2GB of data instead. You also get an extra 15% of data every time you recharge online with a credit card.

Optus offers nearly as many prepaid plans as Telstra (ranging from $15 for 500MB to $100 for 6GB) but the advertised data allowances are a guideline only. Since data is calculated in 10MB increments (with the first 30MB per day charged at 10MB), a lot of that data will go to waste in between sessions.

- 21MBIT/s NETWORK
- 99% POPULATION COVERAGE
- ACTS AS A TABLET PC
- NO EXCESS USAGE FEES ON 5GB & 10GB PLANS

APC MAGAZINE HIGHLY RECOMMENDED

$399

8/10

Telstra BigPond Wireless Broadband

@ www.telstra.com.au

✔ Fast; no excess usage fees on two of the plans; excellent coverage.

✖ Pricey; confusing prepaid top-up system.

It's no surprise that Telstra's wireless service is the most expensive, but in this case the inflated prices are arguably justified. Not only does it have the most expansive 3G network (spanning many rural and regional areas that aren't covered by the other carriers) but it's also the only network that offers wireless internet on its blazingly fast 21Mbit/s network when you use the new BigPond 21 Mobile Card.

Download speeds fluctuated in our tests between 151KB/s to 565KB/s, but on average it hummed along at well over three times faster than the 7.2Mbit/s 3G networks. Upload speeds were also extremely fast, typically matching the download speeds of the other carriers at an average of 120KB/s.

The BigPond's 21 Mobile Card is only available on postpaid plans for a $399 up-front charge. You'll have to sign-up for a minimum 12-month term, but if you're willing to sign up for 36 months, Telstra subsidises half the monthly cost for first year and offers a $299 rebate on the modem.

Telstra's entry-level plans are around double the price of what's on offer elsewhere, with a hefty 25c per megabyte excess usage fee to boot, but the 5GB $89.95 and 10GB $129.95 plans are worth considering as they don't have any excess usage fees: download speeds are shaped to 64Kbit/s once you go over your monthly limit.

Telstra also offers a prepaid wireless broadband kit for $149. This includes a 7.2Mbit/s USB modem and $10 worth of credit, which works out to be equivalent to a measly 75MB.

- PIGGYBACKS ON OPTUS' 7.2MBIT/s NETWORK
- 90% POPULATION COVERAGE
- PLANS START AT $19 FOR 1GB
- NO EXCESS USAGE FEES

APC MAGAZINE apc EDITOR'S CHOICE

$149

9/10

Virgin Wireless Broadband

@ www.virginbroadband.com.au

✔ No excess usage fees; good value plans.

✖ Peer-to-peer traffic limited to 32Kbit/s; slow upload speeds.

Virgin's Mobile Broadband service is a close runner up to 3 when it comes to Plan value. Plans are available postpaid (on both a month-to-month and fixed term basis) and prepaid, starting at $19 a month.

If you pair a postpaid mobile broadband account with a postpaid Virgin Mobile account, you get $5 off the monthly rate; signing up for the 5GB $39 plan on a 24-month contract nets you the modem (worth $149) and the first three months of access for free.

As always, there are catches in the fineprint. Virgin is the only carrier that puts a cap on peer-to-peer downloads by limiting the speed to 32Kbit/s; although this limitation doesn't apply to direct download sites like Rapidshare and Easy News. If you go over your monthly data limit, your download speeds are shaped to 128Kbit/s, but not ad infinitum: once you exceed your monthly limit by 250MB, you won't be able to use the service again until the start of your next billing cycle unless you buy a data top-up ($15 for 500MB).

Like its voice network, Virgin Mobile Broadband rides on Optus' 3G infrastructure, with similar download speeds of 150KB/s. Upload speeds are significantly slower than Optus', though, at around 35KB/s.

Virgin's prepaid starter kit costs $129, which includes the USB modem and a generous 300MB of data. Recharge vouchers are available in $15, $30, $50 and $100 denominations for 500MB, 1GB, 3GB and 6GB respectively. Virgin also gives you more time to use up data on the more expensive plans.

Virgin gets the upper hand on 3 when it comes to coverage. While 3 is limited to 60% of the Australian population, Virgin uses Optus' network, which covers a considerably larger 96% of Australia.

- 7.2MBIT/s 3G NETWORK
- 80% POPULATION COVERAGE
- PLANS START AT $19.95 FOR 1GB

$249

7/10

Vodafone Mobile Broadband

@ www.vodafone.com.au

✔ Good value prepaid plans; retractable head on USB modem.

✖ Inconsistent download speeds; buggy desktop software.

Vodafone's selection of mobile broadband plans is refreshingly simple. The postpaid plans are available on a 24-month contract only, consisting of a 1GB $19.95 plan and a 5GB $39.95 plan. The latter plan gets the modem for free (otherwise it's $249 up-front or $5 a month) and both offer three months of free access if you sign up before June 30.

These plans are middle of the pack when it comes to value, but Vodafone's prepaid plans are a bargain by comparison. The $149 starter pack gets you the modem and 500MB of data (a great deal considering Vodafone usually charges $249 for the same modem up-front), and if you sign up before June 30, you get 2GB of bundled data. Recharging online with your credit card gets you an extra 10% of data.

Prepaid recharge amounts compare favourably with the postpaid plans on other providers: $19 for 500MB, $29 for 1GB and $39 for 3GB, and unused data is rolled over to the next month (up to 5GB) if you recharge within the 30-day window. One catch (isn't there always one?) is that data is charged in 1MB increments, as opposed to the per-kilobyte charging in most other plans.

Download speeds on Vodafone's network were the least consistent in our testing: on two days, we were averaging 75KB/s, another day it was at 178KB/s, and yet another day it jumped to 264KB/s. Upload speeds consistently hovered around 40KB/s.

We liked the Vodafone's USB modem for its retractable USB head (all of the other modems have caps that are easily misplaced), but we're not a big fan of the desktop software, as it's buggy and takes a long time to connect and disconnect.

BUSINESS

Stephen Withers rounds up the latest printers on the small biz printing scene — it's business time.

Does your small or medium-sized business need a new printer? There's a wide range of models that may fit the bill, and in these economically difficult times it's good to know they can deliver better value for money than ever before. You may even find you can get much more functionality than you expected for your given budget.

WHAT'S NEW

Like so many other IT products, printers have been getting cheaper. If you haven't bought one in the last couple of years, you may be surprised by what you can get for your money.

Network interfaces have become commonplace on printers for the SME market, so you don't need to attach them to a server. Some models have Wi-Fi, which is especially convenient for smaller offices. The higher-speed 802.11n hasn't really made an impact yet, but it's not clear whether that's a lack of demand or manufacturers working hard to meet price points. Gigabit Ethernet is beginning to appear on upmarket models.

Vendors are paying increasing attention to 'green' issues. Regardless of whether buyers and sellers are motivated primarily by cost or environmental protection, there's room to kill two birds with one stone.

KC Lu, Canon's senior brand manager, points out that Canon has been able to reduce the energy use of its products by 86 per cent over the last three years.

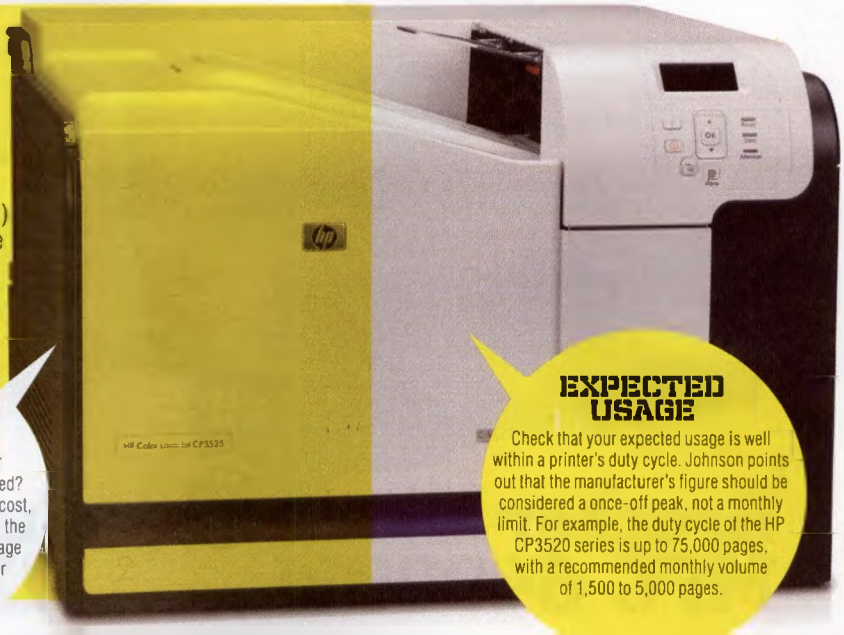
One way manufacturers have managed to achieve such improvements is by reducing warm-up times. Canon's 'quickstart' technology means devices can be ready for use within a few seconds of being powered up. HP's 'instant on' feature means lasers can start printing almost immediately after coming out of sleep mode. Consequently they can be put back to sleep very quickly after completing a job without impacting user productivity. This alone can reduce energy consumption by up to 50 per cent, according to Ben Vivoda, category and marketing manager for consumer, inkjet and web solutions, Hewlett-Packard South Pacific.

Material use has also decreased: Lu says the Pixma MX860 (tested here) is 15 per

What do I look for?

In a good small-business printer.

Buying a printer for your small business isn't the same as buying one for home use. To start with, it's quite likely that the printer will spend more time switched on, and it will print more pages each month. Consequently, total cost of ownership (TCO) becomes a more important consideration. As a general rule, the cheaper the printer, the higher the per-page costs.



LASER VS INKJET

While lasers have traditionally been regarded as having a lower cost per page than inkjets, exactly where the crossover point falls is a matter for debate. Vivoda claims the company's new Officejet 8500 series is up to 50 per cent cheaper to run than similarly priced laser-based products. Adam Faccin, market development manager of the imaging and printing group at Hewlett-Packard South Pacific, suggests the cost advantage of lasers kicks in at around 5,000 pages per month.

VALUE FOR MONEY

Is an MFD's quoted scanner resolution optical or interpolated? How much do the consumables cost, and how long do they last? Can the printer produce a black-only page without using cyan, yellow or magenta consumables?.

EXPECTED USAGE

Check that your expected usage is well within a printer's duty cycle. Johnson points out that the manufacturer's figure should be considered a once-off peak, not a monthly limit. For example, the duty cycle of the HP CP3520 series is up to 75,000 pages, with a recommended monthly volume of 1,500 to 5,000 pages.

UNDER REVIEW

Brother MFC-6490CW

Canon MX860

HP Color LaserJet CP3525

Oki B430dn

Oki C5650n

Samsung CLX-6210FX

PRINTERS

cent smaller than its predecessor, despite the addition of an automatic document feeder.

If you've previously shied away from inkjets because prints tend to smudge (especially if exposed to moisture), newer and more durable inks have effectively solved this problem. This makes inkjet output highlighter-safe.

According to Michael Johnson, major accounts manager at Fuji Xerox, the managed print services (MPS) concept is filtering down to the SMB market. The idea is that instead of paying separately for the printer, consumables and maintenance, you pay a predetermined price per page.

There are two basic MPS models. One is a true all-inclusive price, but this comes with a minimum monthly charge to protect the provider. That's meant to discourage you from picking a high-end printer and only using it lightly. But any time that you don't reach the minimum usage, you'll be paying for consumables and service that you haven't received.

For that reason, Johnson suggests a more appropriate model is to buy the hardware upfront (with conventional finance if necessary), and then taking an MPS contract for consumables and service. After all, the need for new drums and other replacement parts is largely driven by print volume. He also recommends checking that the price per page really is fixed (in case you print a lot of high-coverage pages).

THE RANGE AVAILABLE

For the tests in this feature, we assembled a selection of printers aimed at the SMB market and which cover a variety of technologies and price points: inkjets and lasers, MFDs and plain ordinary printers, A4 and A3, and prices ranging from a few hundred dollars to nearly two and a half grand.

Few of the models are directly comparable, but one of our objectives is to give some indication of the range that's available on the market.

All the printers were tested on an Ethernet network using the same documents. Minor changes to our testing platform mean that timings should not be directly compared with those in networked printer reviews previously published in APC.

Brother MFC-6490CW

@ www.brother.com.au

✔ Large-format print and scan hardware; Ethernet and Wi-Fi standard.

✖ No duplex scanning or printing; no fax receive to Mac OS X.

The MFC-6490CW is the only A3 printer tested in this feature, so it's not surprising that it has a relatively large footprint at 54 x 49cm. Like the MX860, it includes both Wi-Fi and Ethernet interfaces, and has a contemporary look.

Installation and setup are straightforward, thanks to easily accessible ink cartridges, a single installer that presents several options, and a simplified Wi-Fi setup.

One niggle is that the USB and Ethernet sockets are beneath the scanner unit, not on the back panel. This is awkward and may risk serious damage if a cable gets snagged.

The software bundle caters for Windows and Mac OS X, and includes Control Center (scanning, faxing and administrative functions) plus PaperPort 11 SE (Windows) or Presto PageManager (Mac), both of which provide OCR.

The 250-sheet lower tray protrudes around 13cm when loaded with A3 paper. The upper (A4) tray holds another 150 sheets.

Claiming "up to" 28ppm for colour is decidedly optimistic. Our first page appeared after 37 seconds, and page two landed in another 20 seconds — the equivalent of 3ppm. The same document printed two-up on A3 paper took 47 seconds.

Brother's inks are a little less vivid than Canon's (an advantage for business graphics), but the slightly grey black is detrimental to text quality.

The MFC-6490CW supports standalone printing from memory cards, flash drives and PictBridge cameras. The 3.3in wide-format LCD benefits this and other functions. No photo paper was provided, but performance on plain paper was acceptable.

The scanner and ADF accommodate A3 originals. Scanning and copying gave good results, but if you want to send a scan to your PC or Mac, you need to initiate the operation from the computer. Scanning from the front panel gives the choice of email and FTP transmission.

The MFC-6490CW provides the usual standalone fax functions, plus faxing directly from Windows or Mac and fax receiving on Windows only.

It's possible to restrict access to particular functions unless a PIN is entered, but there doesn't seem a lot of point in prohibiting colour copying if you can't also block colour printing.

Canon MX860

@ www.canon.com.au

✔ Duplex ADF and printing; excellent photo print; wired and wireless interfaces.

✖ Relatively slow; limited paper capacity.

Canon's MX860 is a full-function inkjet MFD (print, scan, copy, fax) apparently aimed at the lower end of the SME market. USB 2.0, 802.11b/g and 10/100 Ethernet interfaces are all standard.

Measuring 49 x 44 x 23cm, it's slightly large for a personal MFD but not for a shared model.

Setup would be easier if a USB connection wasn't needed to configure the network interfaces. The software bundle provided with the MX860 is unexciting: just the drivers, manuals and the usual utilities for printing and scanning. Both Windows and Mac software are included.

Although there are more than three dozen buttons on the control panel, they are all clearly labelled. The 2.5in LCD is bright and clear.

Nominal print speed is 8.4ppm for mono and 5.6 for colour. The first page of our document was delivered in 45 seconds with the second in another 23 seconds. That's probably on the slow side for a busy office.

Another problem would be the limited capacity of the paper cassette — around 125 sheets of 80gsm.

The text was reasonably crisp. The flaws that showed up under magnification were not consistent, so where one '0' showed an irregularity, others wouldn't. Still, Canon's black ink is dark and dense, so you wouldn't normally look that closely. Graphic elements were produced with satisfactory though not outstanding quality.

Photo paper (or other non-standard papers) can be loaded into the rear tray, and there's support for standalone printing from memory cards and PictBridge-enabled cameras. We've always liked photos printed on Canon inkjets, and the MX860 did not disappoint.

The fax capability is much like any small business fax machine (speed dialling, memory storage of received faxes and so on) with the bonus of sending directly from a Windows PC.

Mono and colour copying gave pleasing results. Like the printer, the automatic document feeder duplexes automatically, so making two-sided copies of two-sided originals is a hands-off process.

Scanned images can be saved to a memory card or USB drive, or directed to a USB or network-connected computer. In the latter case, scanning can be initiated from the computer or the MX860's control panel.

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MSI recommends Windows Vista® Home Premium

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Where To Buy?

au.msi.com

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HP Colour LaserJet CP3525

8/10

@ www.hp.com.au

✔ Gigabit Ethernet, duplexer & second tray standard; lives up to vendor's claims.

✖ Heavy; relatively noisy.

The most expensive printer tested here, the CP3525x is also the only one providing Gigabit Ethernet in addition to USB 2.0.

The only difficulty with setup is the sheer weight of the printer, which must be lifted onto the second paper tray.

A simple installer deposits the PCL driver, screen fonts and user manual onto the system. No further interaction is required once the printer's address has been established.

Further options include a PostScript driver and administration software: some items are downloaded from HP's servers. Admin options include Easy Printer Care (which handles up to 15 HP printers) and a built-in web interface. Facilities include restricting the use of colour by particular users or applications.

A Mac OS X driver and associated software are also provided, with Unix and Linux supported via downloads.

The CP3525x came closest to meeting the manufacturer's print speeds. HP claims the first colour page can be produced in as little as 11 seconds, and for our test document it was 12 seconds. The second page dropped just two seconds later, matching the claimed "up to 30ppm".

A total paper capacity of 850 sheets should minimise refilling chores.

To the naked eye, black text seemed at least as crisp and clear as that produced by any of the other laser printers we tested, but under magnification, some fine strokes weren't quite as smooth as those from the Oki C5650.

Dither patterns were less noticeable in graphics than they were with the Oki. The relatively dark colours — especially some reds and greens — were not so welcome.

Photo printing was similarly on the dull side, but changing the colour profile from the default settings gave better results — particularly for faces, which looked less ashen.

Personal printing is easily selected from the driver, but having to enter the PIN using the printer's up and down buttons means users are likely to pick easy to enter — and guess! — numbers such as 1111.

Oki B430dn

7/10

@ www.oki.com.au

✔ Ethernet and duplexer standard; optional second tray; good network support.

✖ Front panel hard to read; clumsy installer.

The Oki B430dn is a compact A4 mono laser (more accurately, LED) printer. The dn suffix means a duplexer and a network (10/100 Ethernet) interface are fitted as well as USB and parallel ports.

The software installer lacks an 'install everything' option, so you'll need to install the drivers and several related utilities separately. There's provision for managing multiple printers on a network, and controlling and accounting for printer use.

Apart from the management software, the only application of note is Template Manager, which lets you create a variety of documents for special media such as business cards, disc labels etc.

You don't necessarily need all the components, but it would be a lot simpler if Oki provided a more conventional installer that allowed you to select the desired options in one go.

A Mac OS X driver and some utilities are provided, while a PPD file for use with Linux is available for download.

The printer can be managed via its web interface. There's a compact status window but it doesn't automatically refresh and if, for example, the paper tray is open, the status is merely reported as 'offline'.

These features mean you rarely need to resort to the B430dn's control panel. That's fortunate, as the small, non-backlit LCD is hard to read.

The paper tray takes a reasonable 250 sheets of 80gsm, and the fold-out manual feed tray can accommodate another 50 sheets. If you need more capacity, an optional second tray takes a full ream.

Nominal print speed is 28ppm. Our business document took 30 seconds for the first page and two seconds for the rest. Although the 'first page' time didn't live up to Oki's 5.5 seconds, the second matched the nominal speed.

The text was dark, fine and crisp — just what you want from a device in this class — and the printer's not too noisy. Both PCL and PostScript emulation are provided, which is especially useful in a mixed environment.

The B430dn is a mono workhorse that should keep many small businesses happy.

$864

7/10

Oki C5650n

@ www.oki.com.au

✔ Ethernet standard; optional second tray; good network support.

✖ Clumsy installer; relatively noisy when idling.

Oki's C5650n is an A4 colour 'laser' (actually LED) with USB 2.0 and 10/100 Ethernet interfaces. It's relatively bulky (44 x 56 x 34cm) and heavy (26kg), so consider the optional floor stand/cabinet.

Installing the software is a time-consuming activity involving two CDs (user manuals are on a third). The bundle includes a colour correction utility, print control software, a web-based driver installer (detects a new Oki printer on network and emails users a link to the driver), and a network interface setup utility. A Mac OS X driver is included along with a subset of the utilities. Linux compatibility is claimed on the packaging, but there's no mention of it in the manual.

The two-line LCD on the front panel is backlit and easy to read, and when idle shows the toner levels. The printer's internal web server provides status reports and allows remote management.

The nominal print speed is 22 pages per minute for colour (32ppm for mono) with 11 seconds (eight for mono) for the first page. The first page of our colour document emerged in 16 seconds with the second dropping into the tray three seconds later.

Text quality was excellent. Characters were fine and smooth, with a good solid black. We were unable to spot any irregularities under magnification.

Oki's toner seems particularly glossy, but you should be happy with the results for most office functions. It isn't intended as a photo printer, but brochures and other documents often include photos and our test images gave acceptable results, though tending to red/brown. This could probably be improved by using the Colour Correct utility.

The standard paper tray holds a relatively generous 300 sheets of 80gsm, and the manual feeder takes up to 100 sheets. Where long print jobs are commonplace or more than one type of paper is regularly used, the optional second tray takes up to 530 sheets. The other main option is a duplex unit that attaches to the rear of the printer.

While the C5650n does give pleasing results at a good speed, it is on the noisy side when idling, so locate it away from work desks.

$1,199

7/10

Samsung CLX-6210FX

@ www.samsung.com.au

✔ Ethernet standard; duplex ADF and printing; low-gloss toner.

✖ Slow to print first page; PC faxing is Windows only.

The closest to a freestanding device among our six models, the Samsung CLX-6210FX MFD is 65cm tall, making the ADF and control panel a little too high if placed on a desk.

Software is provided for Windows, Mac OS X and Linux, but direct faxing is only supported under Windows. The bundle includes ReadIris Pro 10 OCR, which integrates with the main program, as well as a toolbar for quick access to the major functions. 10/100 Ethernet and USB 2.0 are standard.

The two-line LCD on the control panel is relatively large, backlit, and easy to read. Most configuration tasks are carried out via the web interface, so the control panel is mainly used for faxing and copying.

Samsung claims a first-page-out time of 25 seconds, but our first page was printed in 32 seconds. Page two emerged after another three seconds — exactly what you'd expect from a 20ppm printer.

Samsung's toner is significantly less glossy than others we've seen, giving pages a more even appearance and eliminating the slightly greasy feel of some colour laser output.

Text is well formed, but perhaps a little too fine at small sizes compared with other lasers we've tested recently, resulting in a slightly faint appearance.

As for business graphics, the results were clear and bright — but not too bright. Photos printed very respectably, and colour copies were just a little darker than the originals.

The main tray takes 250 sheets, and the multi-purpose tray holds up to 100 sheets but is unsightly and protrudes a long way from the front of the printer. An optional 500-sheet second tray is available.

The ADF and printer mechanism are duplex allowing double-sided copying and scanning.

Scans can be directed to a computer running Samsung's software, to FTP or SMB servers, or sent as email attachments. We liked the option of storing scans on a USB drive plugged into the front panel.

exploding tech

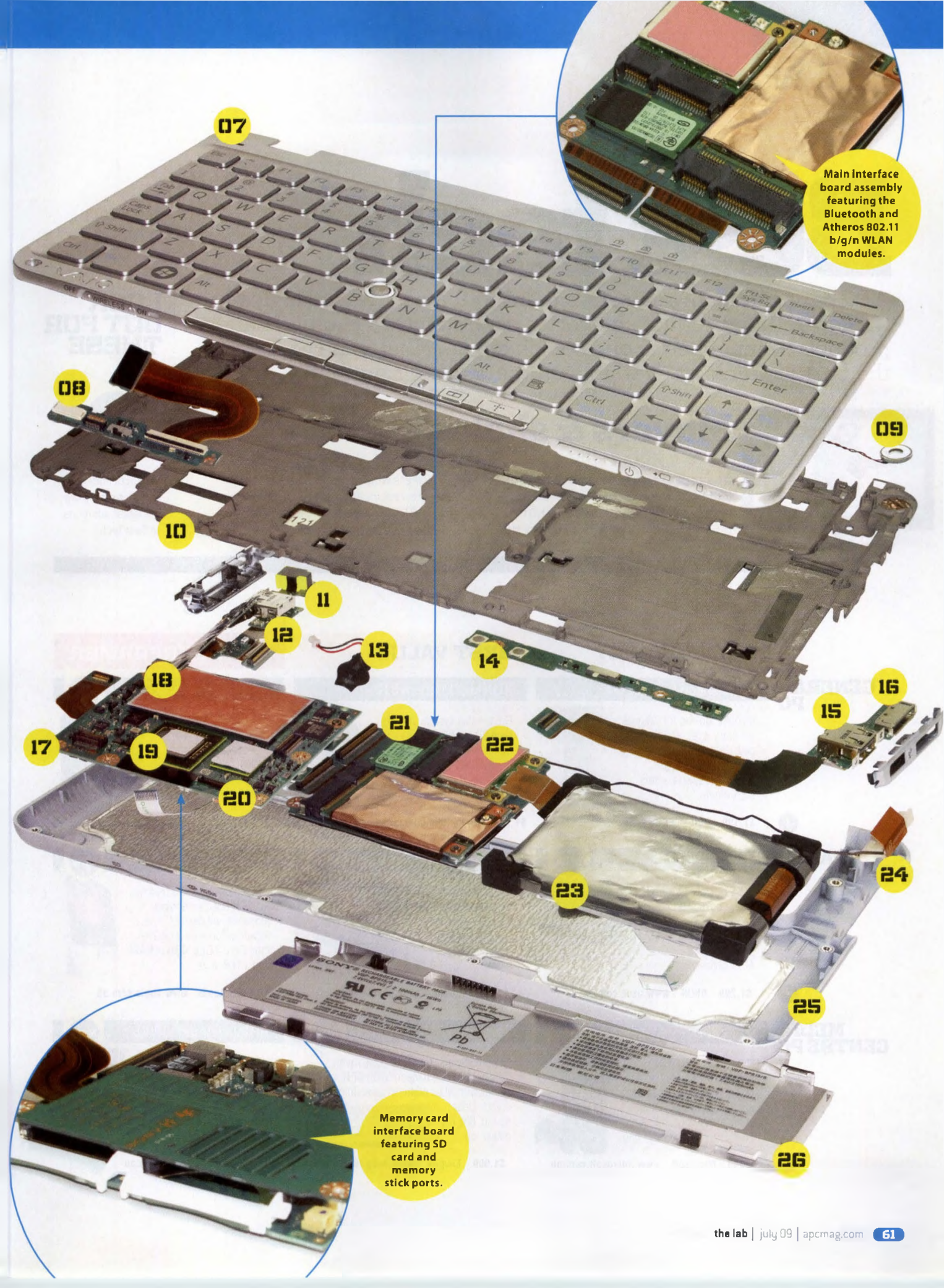
NO. 36

This month we're exploding the uber-cool and ultra-small VAIO P-series netbook from Sony, to see how it managed to squeeze so much good stuff into such a small and light package.

Sony VAIO P-Series

About the size of a business envelope and roughly as thin as a mobile phone, the VAIO P from Sony weighs just 594g with SSD (620g with HDD) and is small enough to slip into a pocket or handbag, while integrating full-PC features. Engineered to provide the feel of a common notebook, the VAIO P provides a very comfortable and familiar typing experience by extending the keyboard to the perimeters of the chassis, maximising the typing area, which, together with the isolation keyboard, helps reduce typing mistakes.

1. Housing bezel assembly
2. 1,600 x 768 resolution 8in widescreen LCD panel
3. Display housing
4. Camera holder assembly
5. MOTION EYE webcam and microphone module
6. Hinge assembly
7. Keyboard and palmrest
8. WLAN switch board
9. Speaker assembly
10. Palm rest frame
11. DC input socket
12. USB, headphone & audio board
13. Rechargeable battery
14. Power switch board
15. USB port
16. I/O port
17. Main board assembly
18. Memory card interface board
19. Intel (1.33GHz) processor
20. Memory stick port
21. Bluetooth module
22. WLAN module
23. 60GB HDD drive assembly in P13 model or 128GB SSD drive assembly in P15
24. Bluetooth antenna
25. Base assembly
26. Battery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Main interface board assembly featuring the Bluetooth and Atheros 802.11 b/g/n WLAN modules.
Memory card interface board featuring SD card and memory stick ports.

Best tech

APC's independent reviewers point to the best technologies in the top-selling product categories each month. We only change products when a better one comes along. What you see here is the best technology available on the market right now.

Movers & shakers

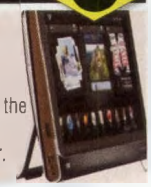
What's hot on the gear scene, for every budget.

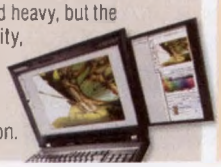
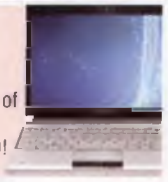
It turns out that a large number of Kevin Rudd's stimulus packages went onto big plasma or LCD TVs, if you believe HDTV retailers. That's been great timing for the TV makers who've put new ranges on the shelves, including Samsung, whose new HDTVs are suddenly pushing for the lead in price/performance.

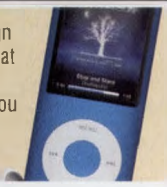
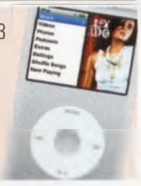
LOOK OUT FOR THESE

NEW

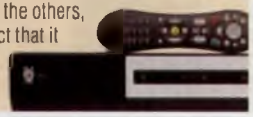
Products marked with this stamp are the latest additions to Best Tech.

	NOTEWORTHY	BEST VALUE	BEST PERFORMER
GENERAL PC	**Dell Inspiron 530 E5200** If you're looking for value at the entry level, it's hard to go past Dell. And what's more, its Inspirons tend to come with special offers each month. $1,199 > Dell > dell.com.au	**TI Deluxe Phenom 810** Great-value system offering both 2D power and 3D performance. This is a PC that is genuinely better value than any Core i7-based machine we've yet seen. Recommended. $1,950 > Trinity International > ticomputers.com.au	**Altech NRG Tornado** NEW Overclocked Core i7, 3GB of Corsair Dominator RAM, GTX 295, two Hitachi 500GB hard disks. You don't get much better value/power than this. $2,299 > Altech > www.altech.com.au
PANEL PC	**Eee Top PC ET1602** NEW Sold as a low-powered PC for novices but doubles as a great web/network terminal: 15.6in glossy screen, 1.6GHz Atom processor. $1,299 > ASUS > www.asus.com.au	**Shuttle X50** NEW At half the price of its competitors, the X50 is the first all-in-one to land in the budget price bracket. $1,099 > Shuttle > www.shuttle.com	**Apple iMac** NEW Little in the PC world matches the 24in iMac's stunning presence and dash of style. Powerful too, with 3.06GHz Intel Core 2 Duo, 4GB of RAM and a 1TB drive. $2,499 > Apple > www.apple.com.au
MEDIA CENTRE PC	**Xbox 360** NEW Not strictly a PC, but perhaps the most popular MC of all: connect it to a PC and record live TV, stream video and audio, and more. Elite version has everything. $649 > Microsoft > www.microsoft.com.au	**Enspire AVR550** NEW Powered by an Athlon X2 5200+ with 640GB HDD and Radeon 3200 GPU, and comes with Maui platform audio to deliver crystal clear sound. Blu-ray player too. $1,999 > Enspire > www.enspiredigital.com	**HP Touchsmart IQ800** NEW HP has really nailed the concept with the IQs machines. The IQ800 is the closest thing to a merger of the PC and TV. Full HD screen, TV tuner and Blu-ray player.  $3,799 > HP > www.hp.com.au

	NOTEWORTHY	BEST VALUE	BEST PERFORMER
EXTERNAL HARD DRIVE	**WD My Book World Edition** WD is trying to make NAS more user-friendly with this new home 1TB NAS which provides Gigabit Ethernet, Wi-Fi connections and DLNA and UPnP streaming. $350 > Western Digital > www.wdc.com	**W D My Passport Elite** A 500GB portable drive that's fast, looks great and fits in your pocket – and best of all can be picked up for around $200 on the street. $200 > Western Digital > www.wdc.com	**Seagate FreeAgent Xtreme** Doesn't have RAID mirroring but still gives you 1TB of storage and Firewire, eSATA and USB 2.0. Plug it in and it's ready to go. Great price. $199 > Seagate > www.seagate.com
USB KEYS	**Kingston Data Traveler Blackbox** Kingston again! They set the standard in USB key drives. This one comes with software that encrypts its contents to FIPS 140-2 Level 2 standard. $140 > Kingston > www.kingston.com	**Kingston Data Traveler 150 32GB** A 32GB USB key that's virtually a portable hard drive — stick hours and hours of video in your pocket. Incredible. Supports Windows & Mac. $140 > Kingston > www.kingston.com	**Kingston DataTraveler Vault** NEW The world's most extravangantly expensive USB key – that's because it comes with hardware-based, on-the-fly, 256-bit AES encryption. $1,239 > Kingston > kingstonmemory.net.au
NETBOOK	**ASUS Eee PC S101** One of the first netbooks to transcend utilitarian, the metallic mocha chassis makes it look a million dollars and highlights the evolution of the Eee PC species. $999 > ASUS > www.asus.com.au	**Kogan Agora Netbook** Base version is almost component for component an MSI Wind; we recommend the Pro: larger (160GB) hard disk, more RAM and 6-cell battery (and is still cheaper). $549 > Kogan > kogan.com.au	**MSI Wind U120H** Same specs as the U100 but delivers on the ideal of the go-anywhere, permanently-connected device by including in-built 3G HSDPA. $999 > MSI > www.global.msi.com.tw
NOTEBOOK ALLROUNDER	**Dell Adamo** Milled from a single razor-thin piece of aluminium, this is Dell's 16.5mm thick take on the MacBook Air fashion accessory. $3,699 > Dell > Dell.com.au	**HP dv2-1001AU** NEW A fantastic offering, melding the price and convenience of a netbook with the powerful hardware and comfort of a fully-fledged notebook. $1,199 > HP > www.hp.com.au	**Toshiba Satellite U400** Not terribly expensive, but one of the best balanced notebooks across performance, features and portability, not to mention price. $2,299 > Toshiba > Toshiba.com.au
DESKTOP REPLACEMENT	**ThinkPad W700ds** Expensive, large and heavy, but the dual-screen capability, integrated graphic tablet and desktop-like specs mean it's a portable workstation.  $7,500 > Lenovo > lenovo.com.au	**Acer Aspire Gemstone Blue 8920G** Incredible 18.4in, 1,920 x 1,080 HD display. There's a Blu-ray drive and 5.1 surround sound. This Core 2 Duo T8300 machine is a 4.1kg head-turning beast. $2,699 > Acer > www.acer.com.au	**HP X18** Top-of-the-line portable media centre. With an 18.4in, 1,920 x 1,080 screen, a Blu-ray player, a DVB-T/Analogue TV-tuner and great speakers. $3,899 > HP > www.hp.com.au
BUSINESS NOTEBOOK	**Sony VAIO VGN-P** A truly tiny $2,299 notebook for business people and fashionistas who would not be seen dead with a cheap netbook. $2,299 > Sony > Sony.com.au	**Lenovo's ThinkPad X301** Lenovo's X ThinkPads look the part. The X301 is the latest in the line, with a 13.3in backlit widescreen display, 2GB RAM and 120GB HDD. $2,924 > Lenovo > Lenovo.com.au	**Toshiba Portege R600** Full-power business notebook in a netbook shell. Sub-1kg, yet with a 1.4GHz Core 2 Duo, 3GB of RAM, DVD burner and 200GB HDD/128GB SSD!  $3,300 > Toshiba > Toshiba.com.au

	NOTEWORTHY	BEST VALUE	BEST PERFORMER
SMARTPHONE	**Nokia N85** NEW A smarter mobile without the overhead and complicated input mechanisms of a standard smartphone, but with most of the goodies and a smashing OLED screen. $919 > Nokia > www.nokia.com.au	**iPhone 3G** Try as we might to find a worthwhile alternative, the iPhone is the best all-rounder smartphone — glorious UI, 3G speed, more apps, and still great pose value. Plan > Apple > www.apple.com.au	**BlackBerry Bold** The Bold is the most addictive BlackBerry yet, with built-in Wi-Fi and GPS, a stunning screen and DivX/XviD playback. It's still the best for email too. Plan > RIM > www.blackberry.com
PHONES	**Sony Ericsson W705** NEW A cross between a phone and a Walkman that delivers on both. As a phone it covers all connectivity bases, while on the media side it uses the same interface as on the PS3. $649 > Sony Ericsson > sonyericsson.com.au	**Sony Ericsson C510** NEW Unprecedented set of high-end features for the money: HSDPA, Bluetooth, an accelerometer, GPS and custom social networking apps. 3.2MP camera with auto-focus. $389 > Sony Ericsson > sonyericsson.com.au	**Nokia E63** NEW Great all-rounder phone with amazing battery life (11 hours talk, 18 days standby) and superb keyboard. No HSDPA/GPS, but Wi-Fi and 3G. $399 > Nokia > www.nokia.com.au
MUSIC PLAYER	**iPod Shuffle** The 3rd-generation shuffle moves the playback controls into the earphones and has voice-over that tells you what song is playing. 4GB of storage carries up to 1,000 songs. $129 > Apple > apple.com.au	**Apple iPod nano** A new long narrow design with an accelerometer that kicks the nano into landscape mode when you hold it sideways. Now in 8GB and 16GB models.  $199 > Apple > www.apple.com.au	**Apple iPod Classic 80GB** The number-one selling MP3 player of all time — with the most intuitive menu system and super iTunes software that combines downloads and music management.  $319 > Apple > www.apple.com.au
MP3 DOCKS	**Altec Lansing octiv AIR M812** Unlike most other iPod docks, the dock and speaker connect to each other wirelessly up to 30m away. Produces a warm, well-balanced sound. $799 > Altech Lansing > alteclansing.com	**TDK NX-04CD remote & Mic** Audio performance blows similarly priced docks out of the water, and looks great. But it can also play music off USB drives and SD cards. $300 > TDK > tdk-media.com	**B & W Zeppelin** Simply the best-quality iPod dock speaker system around, even if not the most expensive. So good you need 320Kbit/s tracks to get the most out of it. $1,300 > Bower-Wilkins > bower-wilkins.com
IN-CAR DOCKS	**Alpine eX-10** A great option for plugging an iPod into your original car stereo. Plug the eX-10 into the auxiliary port or sync it with the FM transmitter. $299 > Alpine > alpine.com.au	**Clarion CZ209A** An affordable in-car single DIN head unit with all the basics, such as direct iPod control (via USB port), plus convenient front panel auxiliary input. $279 > Clarion > clarion.com	**Alpine VA-W502E** The IVA-W502E is Alpine's most advanced mobile media station and plays back all media formats. Plus, it's got a 7in high-resolution WVGA display. $1,899 > Alpine > alpine.com.au
GPS	**Uniden TRAX 430 GPS** Comms company Uniden has released a ripper of a GPS device, impressing with its ease-of-use, exceptional screen and ability to create 3D maps. $379 > Uniden > www.uniden.com.au	**TomTom ONE XL** The most affordable TomTom that delivers the features that matter, with the same display and navigation engine of the more expensive TomToms. $399 > TomTom > www.tomtom.com	**TomTom GO 930** The top-of-the-line TomTom delivers traffic messaging, intelligent live routing, FM transmitter, voice-recognition and text-to-speech. $849 > TomTom > www.tomtom.com.au

	NOTEWORTHY	BEST VALUE	BEST PERFORMER
COMPACT CAMERAS	**Nikon Coolpix S60** NEW If you want something different, this Nikon has an unusual interface, with most controls on a big 3.5in touchscreen. $549 > Nikon > www.nikon.com.au	**Canon Powershot A480** NEW Most affordable Canon compact ever, and unless you're into action photography does a good job of the basic family shots. $199 > Canon > www.canon.com.au	**Canon IXUS 80 IS** Probably the best digital compact on the market, with every function you could ever need but still at a great price. $379 > Canon > www.canon.com.au
DSLR CAMERAS	**Canon EOS 50D** Although better than the 450D, the 50D's price stops it being in the Best Value category. Still not as good as the Nikon D90 but still a great camera by any means. $2,599 > Canon > www.canon.com.au	**Canon EOS 450D** The best low-price DSLR you can get. Suited to the amateur photographer, the 450D offers heaps of features in a tiny DSLR frame. Bargain! $949 > Canon > www.canon.com.au	**Nikon D90** This is just sexy! The first DSLR with HD video, the D90 is the best non-professional camera you could get without sending yourself broke. $1,699 > Nikon > www.nikon.com.au
HD CAMCORDER	**Panasonic Hybrid HD-HS20** NEW A pocket rocket Full HD camcorder with surround sound and 80GB HDD and flash storage. Excellent all-rounder for the price. $1,700 > Panasonic > www.panasonic.com.au	**Sony HDR-CX100E** NEW With the excellent mechanics and HD optics of Sony's new HDR range but with 8GB flash-storage. The most affordable Sony HD. $1,199 > Sony > www.sony.com.au	**Sony HDR-XR520V** NEW Want the best consumer camcorder out there? With 240GB HDD storage capacity, 12MP still images and so much more. $2,699 > Sony > www.sony.com.au
PHOTO FRAMES	**Kodak EASYSHARE W1020** In addition to a great 10in display, comes with Wi-Fi access that connects you to Kodak online content and can receive (and send) pictures from Flickr or Kodak's gallery. $285 > Kodak > www.kodak.com	**Kodak P720 Touch Digital** Kodak's entry-level Photo Frame, with a good quality 7in screen and the excellent Quick Touch Border which makes it really easy to navigate menus. $140 > Kodak > www.kodak.com	**Samsung SPF-105V** NEW Almost like a mini-TV with an impressive monitor and able to play MP3s and video files, plus lots of slideshow effects. $399 > Samsung > www.samsung.com/au
HDTV	**Kogan 1080p-42** NEW The most HDTV you can get for the money: a 42 incher for $1,200. Bit lean on picture refinement technologies found in others, but who's complaining? $1,200 > Kogan > www.kogan.com.au	**Samsung A650A1** NEW Samsung's new HDTVs have taken the South Korean maker to a new level; this sub-$2,000 TV has all the features of last year's most expensive units. $1,999 > Samsung > www.samsung.com.au	**Samsung LA46A950** NEW The first HDTV range to offer live internet content through RSS feeds, plus sophisticated LED backlighting produces blacks to rival plasmas. $5,499 > Samsung > www.samsung.com.au
TV TUNER	**Silicon Dust HD Home Run** A networked TV tuner server that allows any PC on your network to access digital television. Cheaper and easier than multiple antenna points. $299 > Lako Pacific > hdhomerun.com.au	**Kworld DVB-T 395UR** A basic HD tuner card that allows you to watch HD digital TV on your PC or notebook. It's not flash, but it works well, is portable and convenient. $79 > Kworld > www.kworld.com.tw	**Hauppauge WinTV PVR-350** With a 125-channel capable receiver, this PCI card pauses and replays shows, is able to schedule recordings and burn them to CD or DVD. Great quality. $429 > Hauppage > www.hauppage.com

	NOTEWORTHY	BEST VALUE	BEST PERFORMER
DISC PLAYERS	**Sony PlayStation 3 80GB** Yes, it's a games console, but it also doubles as a Blu-ray player that's as good as any standalone devices on the market. It's the same price as some of the better ones, so do your sums. **$699 > Sony > www.sony.com.au**	**Kogan Blu-ray Player** Basic, affordable. Plays back good-quality HD and upscales DVDs. Downside is lack of support for BD-Live (Profile 2.0) which means no internet content or firmware upgrades. But at $249 who's complaining? **$249 > Kogan > www.kogan.com.au**	**Sony BDPS350** Superb HD playback quality and does great upscaling of DVDs to high definition. Unlike the $1,799 Pioneer, available for around $400 on the street. **$400 > Sony > Sony.com.au**
DVR	**FOXTEL iQ2** If you watch pay TV, the FOXTEL iQ2 is a must. Records both standard and high-definition free-to-air TV to a spacious 320GB hard drive. **$10 month > FOXTEL > www.foxtel.com.au**	**TiVo HD** The TiVo's smart recording features (such as WishList) are the main reason you'd choose this DVR over the others, despite the fact that it won't record pay TV.  **$699 > TiVo > www.tivo.com.au**	**Panasonic DMR-BW500** The ultimate high-definition DVR — can record two HD programs simultaneously to its 500GB hard disk or directly to Blu-ray media. A bucketload of connectors too. **$2,199 > Panasonic > Panasonic.com.au**
ROUTER	**D-Link DGL-4500** A dual-band gigabit router built for gamers. Helps prioritise game traffic, and now with Green technology, which detects link status and cable length and adjusts power usage accordingly. **$350 > D-Link > www.dlink.com.au**	**TP-Link TL WR941ND Wireless N** A Draft 2.0 N router with MIMO, using three adjustable antennas for speeds of up to 200Mbit/s. Performance is decent and the documentation is good. **$129 > TP-Link > www.anyware.com.au**	**Linksys Dual-N WRT610N** It does dual-band Wireless N (5GHz and 2.4GHz), is one of the best performers in testing and looks great. Comes with Linksys' superb LELA network setup wizard. **$290 > Linksys > linksys.com.au**
PRINTER HOME	**Canon Selphy ES2** A dye sublimation printer, the Selphy can print directly from every variation of memory card and even from mobile phones, and you don't need a computer. **$299 > Canon > www.canon.com.au**	**HP Color LaserJet CP1215** It's not the fastest colour laser out there, but it has two things going for it: the HP LaserJet heritage and its price, which is well-affordable home use. **$299 > HP > hp.com.au**	**Samsung CLP-350N laser** The first in the Samsung lineup of excellent affordable colour lasers, with all the specs to meet basic home or business requirements. **$399 > Samsung > Samsung.com.au**
PRINTER — SMB	**OKI B430dn** If you're looking for a solid workhorse mono laser, OKI's B430dn is perfect for the task, and should keep many small businesses happy. **$875 > Oki > www.oki.com.au**	**Dell 2130cn Colour Network** Dell is becoming synonymous with value in business printers. Its 2130cn is a good entry-level, biz-grade colour laser, with a duty cycle of 40,000 pages/mth. **$499 > Dell > dell.com.au**	**HP Color LaserJet CP3525x** On the expensive side, but the CP3525x provides Gigabit Ethernet in addition to USB 2.0. Great if you feel the need for speed and can put up with some noise. **$2,403 > HP > www.hp.com.au**
MFC	**Canon MX860** Canon's MX860 is a full-function inkjet MFC aimed at the lower end of the SMB market, with USB 2.0, 802.11b/g and 10/100 Ethernet. **$299 > Canon > www.canon.com.au**	**Epson Stylus Photo TX800FW** This stylish MFC will look great in a home office — but it also produces good photos and good copying results. Can also be shared across a network. **$399 > Epson > www.epson.com.au**	**Brother MFC-6490CW** If your business needs an A3 printer, the Brother MFC-6490CW is a good choice. Includes both Wi-Fi and Ethernet interfaces. **$549 > Brother > www.brother.com.au**

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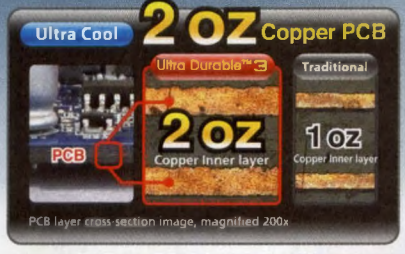

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FROM THE READERS OF APC

APC MAGAZINE OWNER BUILDER READER PC

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Submit your PC configuration to *APC*'s Master Builder and, if chosen to appear in the mag, you will win a Logitech MX1100 Cordless Laser Mouse worth $179.95, and the Professional Master builder will also give you some advice on your machine. The MX1100 fits naturally in your hand for maximum comfort. The MX1100 also lets you fly through long documents and web pages with one spin. Send your PC configuration to masterbuilder@acpmagazines.com.au.

Best bang-for-buck gaming PC?

Karl reckons you can't get better value for gaming than his PC.

CORE SYSTEM

SYSTEM COST $1,055

Karl State is a 21 year-old student from Perth who is a PC hardware and case-modding enthusiast. He likes to get the best value and performance from a system without skimping on quality, and confidently reckons this is a better machine than last month's Master Builder's $2,000 gaming PC. When not studying or building PCs, Karl hangs out with the great whites, surfing off Scarborough Beach.

CPU

Intel Pentium Dual Core E5200 - $99

The best bang-for-buck dual-core CPU on the market right now. It's an awesome overclocker that many have running on 3.5GHz+ quite happily with air-cooling alone.

COOLER

Xigmatek S1283 - $55

One of the best value price/performance CPU coolers available on the market.

MOTHERBOARD

DFI LANPARTY-DK X48-T2RSB PLUS - $200

Might be hard to track down, but, if you find it, get it. This is a great overclocking board and also has XFire support. May seem expensive but is well worth it if you utilise the features offered.

RAM

4GB Kit (2x 2GB) DDR2 800MHz generic RAM - $80

Whilst more expensive RAM does have its place, generic 800MHz DDR2 RAM will be more than suitable for this build. 4GB should help keep resource-hungry applications and software happy for a while.

HDD

WD 640GB 16MB SATAII - $100

Best value-for-money hard drive on the market. Make sure you get the Blue or more expensive Black versions if it's going to be your primary OS HDD. The Green version is great for storage as a second HDD.

GRAPHICS

2 x ATI HD 4770 - $330 ($165 each)

The recent 45nm ATI 4770 graphics card is known to be generally faster, cheaper, less power-hungry and cooler than other cards. Also beats a HD 4890 most of the time for price/performance when in XFire. Great value and also overclocks really well.

CASE

Antec Designer with Earthwatts 500w PSU - $180

Great budget case with solid design and a high-quality, efficient and capable PSU that provides safe and reliable power to your components, unlike cheap, inferior generic power supplies, which often fail when placed under load and are less efficient with power.

OPTICAL DRIVE

Pioneer 216BK - $30

Great-value DVD burner, highly popular, and for a reason too.

EXTRAS

MONITOR

21.5in BenQ E2200HD - $240

A great value 16:9 ratio, 1080p monitor that, for the price, is sure to impress. If you have problems finding this monitor, check out the G2220HD, which is around $225. Another great HD monitor from BenQ.

KEYBOARD AND MOUSE

OEM Logitech Desktop 350 pack - **$25**

Great-value and quality basic desktop package; you can always buy something better down the road if desired.

OPERATING SYSTEM

Windows Vista Home Premium x64 OEM - $180

With the release of SP1 and maturity of Windows Vista in general, it is now the preferred OS for most computing enthusiasts. Make sure you get the 64-bit version, which is virtually problem-free and future proofs your system a little extra. Also lets you utilise more RAM!

Total with extras: $1,519

APC reader and Owner Builder, Karl State.

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HOW TO BUILD THE ULTIMATE PC

APC MAGAZINE MASTER BUILDER PRO BUILD

One of the joys of computing is building your own PC. Each month a Master Builder will configure a PC for a specific task and pricepoint, recommending the best components for the job. But we also want to know what you, our readers, are building, so Owner Builder is your showcase.

The ideal Windows 7 PC

Altech's Master Builders tailor a PC for Microsoft's new OS.

With Windows 7 expected to hit the market in October we asked the professional PC builders at Altech to spec out a PC to take advantage of the new OS. Altech's Systems Product Manager Christopher Dagher is one of the PC maker's master builders, while Michael Leins is Altech's R&D engineer, in charge of components testing. Altech's PCs are regularly reviewed in *APC* and win highly recommended and Editor's Choice prizes. We asked them to configure a system that was ideal for Windows 7.

CORE SYSTEM

SYSTEM COST $1,718

CPU

Intel 920 Core i7 - **$599**

2.66GHz, 4.8GT/s QPI, 8MB cache, Socket LGA1366

The upcoming Microsoft Windows 7 will give great benefits to the processing department. Since Windows 7 requires far less CPU resources than Vista, the CPU can now be fully utilised by all of its multi-cores in critical applications and increase overall performance.

COOLER

Thermolab BARAM - **$79**

120mm fans, suits Intel Socket 775, 1366CPUs, AMD Socket AM2+/AM2 CPUs

The Thermolab BARAM heat sink uses a combination of pure copper and aluminium materials to provide optimum heat extraction, while the positioning of the fins provides maximum air flow. This heat sink also results in a dramatic decrease in noise levels from a stock cooler and allows headroom for overclocking while keeping temperatures stable. You can add an additional 120MM fan starting from $13.

MOTHERBOARD

Gigabyte GA-EX58-UD3R MB - **$369**

Intel X58+ICH10R, QPI 6.4GT/s, DDR3 2000, PCI-Ex16, SATAII, RAID, Gigabit LAN, 8ch audio, 2oc PCB, USB2 , heat pipe, ATX

At last we have an operating system that installs all necessary motherboard drivers. You will never have to open the motherboard box again. Microsoft Windows 7 installs default certified drivers allowing the user to reduce workload and installation time. This Gigabyte motherboard provides stability and reliability under default or overclocked conditions in a great partnership with the operating system. Another great feature of this motherboard is that it supports both NVIDIA SLI and ATI CrossFireX technology.

RAM

Corsair TR3X3G1333C9 3GB - **$129**

3 x XMS3 1GB, PC-10600 1,333MHz, XMS DDR3 For X58 MB/i7 Core, 3x240-pin DIMMs, Triple Kit, 9-9-9-24, 1.50V

Corsair memory is reliable and offers a lifetime warranty, so you can't you go wrong here. Thanks to the improved memory management in Windows 7, you will be able to experience the benefits in applications and gaming.

GRAPHICS CARD

ATI HD 4770 PCI-E 2.0 512MB GDDR5 - **$199**

ATI always consider the consumer first, just releasing its new 40nm technology ATI HD 4770.

Altech's Michael Leins (left) and Christopher Dagher (right).

PRO OPINION

ALTECH'S MICHAEL LEINS COMMENTS ON OWNER BUILDER KARL STADE'S PC

SEE PAGE 68

First up, I want to make clear Karl made a great system for a great price. If someone asked me how to improve this system I couldn't say much, but here's some thoughts: The bottleneck in this configuration is the CPU. He has done a great job, quality case and power supply, 2 x 4770 CrossFire graphics and a DFI motherboard. These are all good reasons not to stick to an entry-level CPU. I think an E8400 or a quad-core processor would really round out this system. It's always difficult to judge a dual graphics card system; on one side it makes sense to use 2 x 4770 instead of a single 4890 as the performance is higher, and thanks to the 40nm technology the power consumption of CrossFired 4770s is nearly the same as a single 4890. On the other hand, you could think about upgrading the system later on, so put in a decent single card now and grab another one when the price drops.

An excellent all-rounder offering HD video compatibilities and decent frame rates in games, the HD 4770 is extremely excellent value for money.

HARD DRIVE

2 x Hitachi 500GB DeskStar 7K1000 - **$119**
3.5in SATA 3.0 GB/s HDD, 16MB, 7,200rpm
In our experience Hitachi hard drives have proven to be reliable in both normal and RAID environments. With a generous 1TB of storage selected for this setup, you get plenty of space for movies, music and games. The system provides flexibility to RAID, configure a dual-boot setup or improve your backup solution.

OPTICAL DRIVE

Sony SATA Double Layer Multi format 20x DVD±RW - **$59**
Sony is one of the leading brands when it comes to consumer products. With this drive you will be able to back up, store and record data to both DVD and CD media at impressive speeds. Windows 7 also has a great software tweak allowing users to burn ISO files without having to install third-party software.

CASE

Antec NSK4000B-II Mini Tower - **$99**
The Antec NSK 4000B-II case offers easy installation, stylish designs and provides a cool and quiet solution for this Windows 7 PC build. It's compatible with Mini-ITX, MicroATX, Standard ATX motherboard and plenty of expandability.

POWER SUPPLY

Antec True Power 550 - 80 PLUS Bronze Certified - **$185**
Antec True power offers an advanced power supply solution, remarkable stability and quality. The TP-550 is 80 Plus Bronze-certified, which will help you save energy and lower your electricity bill.

EXTRAS

MONITOR

BenQ G2412HD 23.6in Widescreen LCD - $429
BenQ monitors provide a perfect display solution for movies, gaming and general everyday use with features such as 2ms response time (GTG), resolution of 1,920 x 1,080, 40,000:1 Dynamic Contrast Ratio, HDMI input with HDCP support and elegant glossy black design. Combined with Windows 7 display features you can make your text even sharper and select the brightness that is best suited for your eyes.

KEYBOARD & MOUSE

Gigabyte GK-KM7500 wireless combo package - $67
This is a practical and stylish combination, offering a 2.4GHz wireless multimedia keyboard with 17 hot keys, and is effective up to 10 metres. With an 800dpi optical mouse this is a good all-rounder.

Total with extras: $2,465

Best build

APC experts recommend the best components to build the best budget, mid-range and ultimate PCs that money can buy.

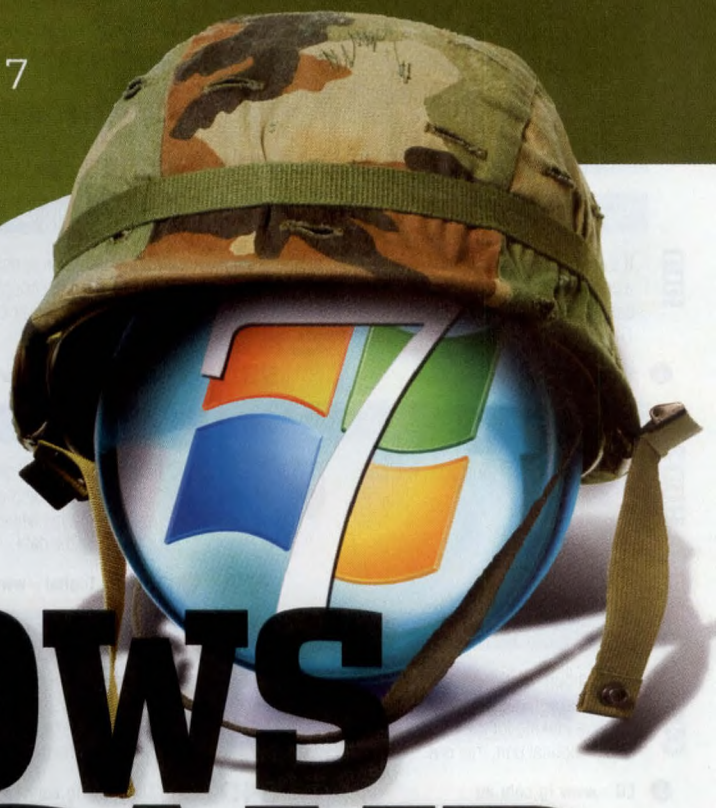
LOOK OUT FOR THESE

NEW

Products marked with this stamp are the latest additions or updates in Best Build.

	BUDGET $1,188	MID-RANGE $3,103	THE ULTIMATE $9,119
CPU	Intel Pentium E5200 2.5 GHz Ultra cheap entry-level CPU which can be overclocked to perform like a more expensive CPU, such as an E7300. Intel > www.intel.com $100	Intel Core i7 920 The baby of the new Core i7 family blows away its Intel predecessors in anything requiring multi-processing. Needs X58 chipset motherboard. Intel > www.intel.com $475	Intel Core i7 965 Extreme Edition Simply put, this is the fastest desktop quad core CPU available today. You will not find better. Intel > www.intel.com $1,675
COOLER	Cooler Master Hyper Cooler Master TX2 Don't let the price tag scare you off: this offers many of the features we see in higher-end coolers: a copper base, alum. fins and 3 heat-pipes. Cooler Master > www.coolermaster.com $49	Thermolab BARAM The Thermolab Baram heat sink uses a combination of pure copper, aluminium and positioning to provide maxiumum heat extraction. Thermolab > www.thermolab.com $70	Cooler Master V10 Two fans, three sets of cooling fins and ten heat pipes that will cool anything. The ultimate thermal solution. Cooler Master > www.coolermaster.com $208
MOBO	Gigabyte GA-EP45-DS3L Great budget board. Has good performance, can handle overclocking and comes with a great price. Gigabyte > www.gigabyte.com.au $170	Gigabyte GA-EX58-UD3R MB NEW Stable and reliable under default or overclock conditions. Also supports both NVIDIA SLI and ATI CrossFireX technology. Gigabyte > gigabyte.com.au $369	ASUS P6T Deluxe/OC Palm Overclocking features for the Core i7 extreme. Includes an external PDA-like device for monitoring and overclocking. ASUS > www.asus.com.au $599
RAM	Team Extreem Dark PC2-6400 4-4-4 4GB An aggressively-priced low latency DDR2 kit that packs a whopping 4GB across two sticks, more than enough for most gamers. Team Group > www.teamgroup.com.tw $130	Corsair TR3X3G1333C9 3GB (1333MHz) Corsair DDR3 memory is reliable and stable, using XMS technology heat spreaders to keep the memory chips cool. Corsair > www.corsair.com $165	Corsair Dominator TR3X6G2000C8GTF This is the biggest overclocking RAM on the market. Push the clocks up to 2,000MHz and at 8-8-8-24 timings. Corsair > www.corsair.com $679
GRAPHICS	Sapphire HD 4770 NEW The first affordable card to use GDDR5 memory, and with a 40nm core. Will run most games on a 22in screen in nearly full resolution. Sapphire > www.sapphiretech.com $169	ATI Radeon HD4870 GDR5 Offers good value and performance. Runs CrossFire, so you can always add a second card for incredible graphics performance. AMD > www.amd.com $490	Manli GeForce GTX295 1792MB NEW Manli has taken the fastest card on the market and jammed more memory in it. Some minor overclocking will make it even faster. Manli > www.manli.com $795

	BUDGET	MID-RANGE	THE ULTIMATE
HDD	Seagate Barracuda 500 GB 32MB It's astonishing to realise that a good quality 500GB drive can be had for less than $100. The best budget option. Seagate > www.seagate.com $90	Western Digital Caviar Black 1TB A 1TB drive was considered a premium HDD a couple of months ago, now it's the minimum for a reasonable PC. Western Digital > www.westerndigital.com $200	Western Digital Green Caviar 2TB Need more storage? Try the world's first 2TB hard drive from WD. This 3.5in drive has four 500GB platters and a 32MB cache. Western Digital > www.westerndigital.com $469
HDD 2	None needed (At this price level, one drive will do.) N/A	Western Digital VelociRaptor Fastest mechanical drive, with 300GB. Should be the primary drive for OS and apps while a fat slower drive holds the data. Western Digital > www.westerndigital.com $280	Intel X25-E 64GB SSD Use this SSD for pure speed on your boot disk. You'll be amazed at the difference. If you can afford it, it's like a major RAM/CPU upgrade. Intel > www.intel.com $1,500
OPTICAL	LG 22x Dual Layer DVD RW SATA Doesn't burn to Blu-ray but cheap and does the job. If you're looking for the best budget optical unit, this is it. LG > www.lg.com.au $40	LG Blu-ray/HD-DVD Combo Drive Plays both Blu-ray and remaining HD-DVD discs, and also comes with PowerDVD 7. Can be upgraded to support 6-channel audio. LG > www.lg.com.au $170	Sony BWU3200S Blu-ray burner Writes to BD-R at 4x and BD-RE at 2x, plus does all the usual DVD reading, writing and arithmetic. Nice one. Sony > www.sony.com.au $490
PSU	Antec Basiq BP500U From Antec's budget range of power supply units but is a solid workhorse performer which does the job. Antec > www.antec.com $90	Antec TP-550 The Antec True Power 550W PSU is highly efficient, stable and reliable. With three +12V rails it allows power to be distributed more evenly. Antec > www.antec.com $150	Gigabyte ODIN Pro 1200W Modular Modular cabling, 4-rail design, Japanese capacitors and runs silent. Plenty of juice for a top-end system. Gigabyte > www.gigabyte.com $375
CASE	Thermaltake Case Wing RS101 A good, cheap but effective mid-tower case with a 120mm fan, extra ventilation for CPU and tool-free assembly. Nice piano-black finish! Thermaltake > www.thermaltake.com.au $80	Antec Nine Hundred Two Antec has updated its classic Nine Hundred gamer's case, improving the cooling and adding better cable management and an inside paint job. Antec > www.antec.com.au $220	Cooler Master ATCS 840 Nothing says style like understatement. Top-quality design and manufacture, plus heaps of room and cooling. Cooler Master > www.coolermaster.com $400
MONITOR	BenQ E2200HD A 21.5in Full HD Widescreen LCD monitor offering 5ms Response Time, 1,920 x 1,080 resolution, Dynamic Contrast Ratio of 10,000:1. BenQ > www.benq.com.au $250	Dell 2209WAf With a top-quality panel, clean design, built-in hub and adjustable stand, this monitor should last through a few upgrades. Dell > www.dell.com.au $419	Dell 22in Crystal Maybe not the fastest or the biggest monitor around, but take a look at it! Stylish as they come. Dell > www.dell.com.au $1,599
KEYBOARD	Logitech Ps II Keyboard and Mouse An affordable but effective combo. Combining packages of keyboard and mouse is the best way to stick to a budget. Logitech > www.logitech.com.au $20	Microsoft Natural Keyboard 4000 Excellent ergonomic board with loads of hot keys. Great for hand comfort and heaps of value-added special functions. Microsoft > www.microsoft.com.au $50	Logitech G19 Is it still a keyboard if it comes with its own mini monitor? Probably has more computing power than your first PC. Logitech > www.logitech.com.au $245
MOUSE	Logitech Ps II Keyboard and Mouse Combinations of keyboard and mouse are the best options when trying to keep your peripheral costs down. (See above.) Logitech > www.logitech.com.au N/A	Microsoft Wireless Laser Mouse 600 Superb ergonomic and affordable laser mouse with Windows flip 3D key and four-way scrolling. Microsoft > www.microsoft.com.au $45	Cyber Snipa Stinger Laser Mouse We've come to love this mouse, despite (or because of) its good performance and reasonable price. Cyber Snipa > www.cybersnipa.com $85



WINDOWS BOOT CAMP

Which Microsoft OS is best? There's only one way to find out, says **Mike Williams**. Fight!

Buying a Windows OS used to be so simple. A new version appeared, most people agreed it was better than the last one and you'd get a copy for your next PC. Job done. But Windows Vista changed all that. Despite many years of availability, Vista's poor reception means that computer manufacturers are still selling new systems with XP. It's also common for laptops to be downgraded from Vista to XP, with battery life improving as a result.

Deciding which operating system is best for you has become decidedly trickier, then, and the arrival of Windows 7 only complicates things further. Is the newcomer just Vista with a facelift? Or has Microsoft learned from its mistakes and delivered a product that will restore its battered reputation? Perhaps you should forget about Vista and Windows 7 altogether, opting for the mature XP instead?

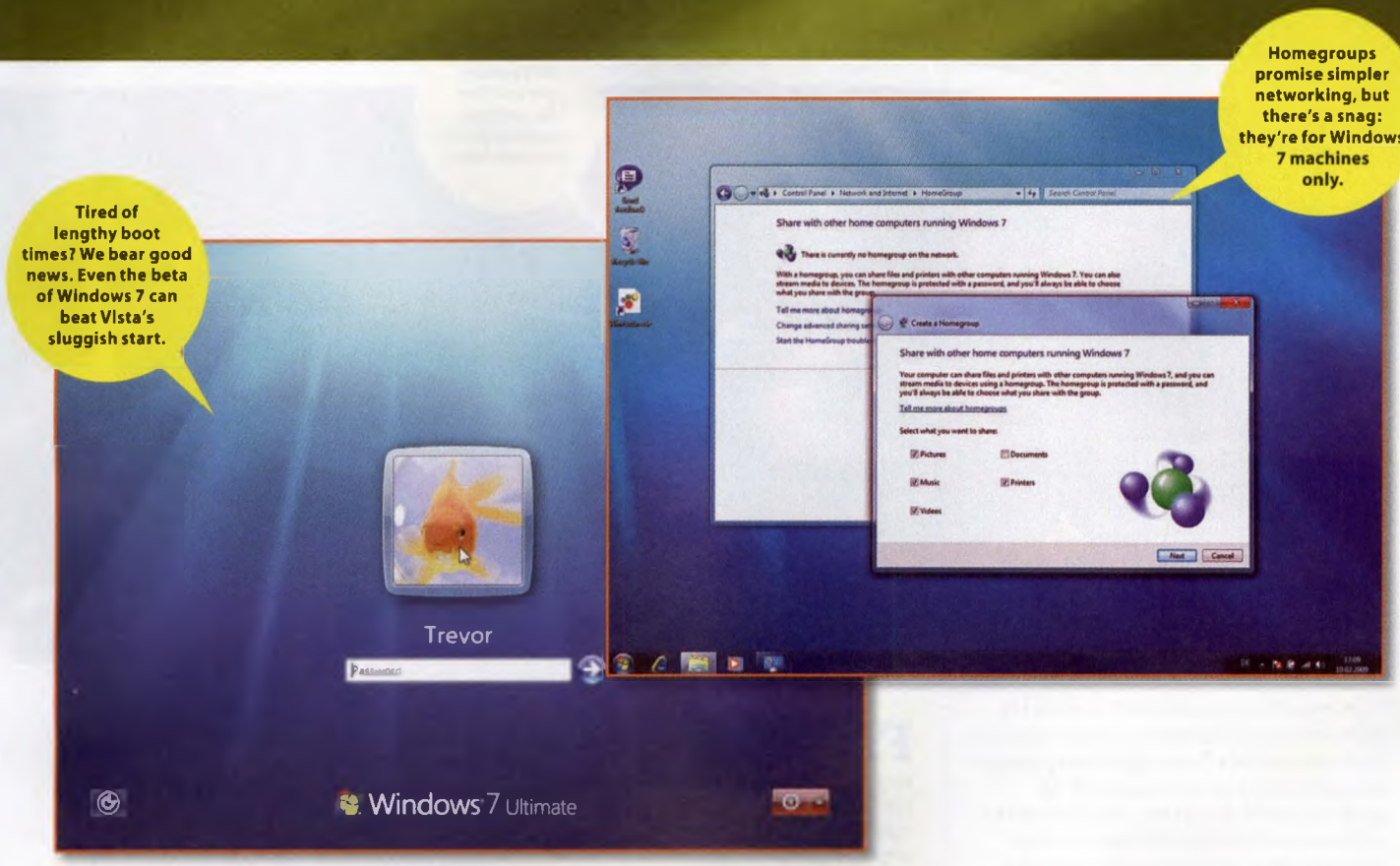
The choice might be easy. If you have old or extremely basic hardware, for instance, then XP will have a definite advantage: its relatively lightweight core means the operating system can theoretically run with only 64MB of RAM, so there'll be plenty of resources left over for your applications.

However, if you have high-end requirements, such as using a powerful PC to run heavy-duty applications, Vista and Windows 7 come into their own. They're better optimised for multicore CPUs, and Windows 7 in particular includes a number of tweaks to make the best of the latest hardware.

You may well find yourself somewhere between these two extremes, though, and so the 'best' OS to use will be a more difficult decision. But don't worry, help is at hand. We've taken a test PC and laptop, installed XP, Vista and Windows 7 on them and applied a number of testing real-life benchmarks to see which will come out on top. We're aware that speed isn't everything, though, so we've also explored the new features that each OS has introduced. To make life easy for you, we've split our findings over eight categories, with an overall verdict at the end. Read on to find out what we've uncovered.

1 PERFORMANCE

It's often said that recent versions of Windows have become bloated, and it's hardly unreasonable to expect each new OS to perform better than its previous iteration. However, when Windows XP first appeared back in 2001, it was designed to run happily on 300MHz Pentium II CPUs with a mere 128MB of RAM. Thus, it should come as no surprise that the lightweight OS runs quickly on today's processors. Newer OSs can optimise for modern hardware and include more powerful features, but is this extra functionality really just slowing us down?


Tired of lengthy boot times? We bear good news. Even the beta of Windows 7 can beat Vista's sluggish start.
Homegroups promise simpler networking, but there's a snag: they're for Windows 7 machines only.
Trevor
Windows 7 Ultimate
Share with other home computers running Windows 7
Create a Homegroup

To find out, we decided to test each operating system's performance on an average PC. The system is nothing particularly special by today's standards, consisting of an Intel dual-core E5200 CPU, 2GB of RAM and an ATI Radeon HD4550 graphics card. We installed XP, Vista and Windows 7 in that order (all 32-bit versions) on the machine's 500GB hard drive and ran a number of real-world benchmarks to find out which OS was best.

The boot time test provided no surprises: Vista took the longest time to get started, XP came in second place and Windows 7 was the fastest.

At first it seemed like our file transfer benchmarks would deliver the same results. Vista produced poor copy speeds in our small file tests, XP again placed second and Windows 7 came out on top. But when we tried transferring larger 1GB files, Vista surprisingly just managed to win out over XP. Both were beaten by the speedy Windows 7, though.

This proved true for our application tests as well. Open a small Excel spreadsheet or PDF file, say, and XP beats Vista, but heavy-duty spreadsheets and PDF files opened faster under Vista than XP. Once again, however, both were trounced by the newcomer.

You might have spotted the theme here. Windows 7 delivered excellent results, beating or coming close to the performance of the lightweight XP in just about every category. It's quite remarkable given that this is an operating system still in beta. When all the drivers are fully finished, we should see even better performance.

If we'd run the benchmarks on a less powerful PC, perhaps one with only 1GB of RAM, then it's possible that Windows XP would have fared better than it did here. But for even a fairly basic modern PC, Windows 7 delivers the best performance around.

XP ★★★½
Vista ★★★
Windows 7 ★★★★½

2 NETWORKING

One of the few fundamental laws of computing is that no network is ever as fast as you'd like, so news of Vista's optimisation of TCP/IP was universally welcomed. Then we got to try out the new system for ourselves and realised that it didn't live up to the hype. Although there are circumstances where Vista's networking works well — transferring large files, for example — typical tests suggest Windows XP often works faster than its younger sibling.

These issues are a real shame, though, because Vista does have some useful networking features on offer. The Network Map displays a helpful graphical view of all your devices and the Network Setup Wizard can be genuinely useful. It's generally simpler to find and connect to wireless networks as well, while WPA2 encryption helps to keep you secure. And if things do go wrong, at least you'll benefit from Vista's detailed status reports. For example, Vista will let you know if your network is OK but you've lost your internet connection. Then the Diagnose and Repair option will try to fix the issue without requiring much input on your part. Internally, nothing too complicated is happening, but anything that helps you avoid using cryptic command-line tools should be welcomed.

Windows 7 takes Vista's networking features and adds homegroups — a simple way to create a network and securely share your pictures, music, videos, documents and printers. Sounds good, right? We're not entirely convinced. Homegroups will only work with Windows 7 systems, so if you've got an old XP or Vista PC then you'll have to create and manage your network the old-fashioned way. Once you've figured out how to do that, it's hard to see why you'd ever move to homegroups in future. It's even possible that users will largely ignore them and continue to create and manage networks just as they always have.

Still, Windows 7 does appear to have improved on Vista's networking performance.

It jostled for top spot with XP in our tests, each winning one file transfer speed test apiece. That said, Windows 7 was significantly quicker at transferring large files. Along with its generally useful-feature set, that's enough for us to award it first place. But be aware that network speeds can vary greatly depending on your hardware, so consider our results as provisional.

XP ★★★½
Vista ★★★½
Windows 7 ★★★★

3 SECURITY

There are plenty of reasons to like Windows XP, but security isn't one of them. The operating system still receives regular patches, and will continue to do so until 14 April 2014,but it's missing Windows Vista's reassuring security developments. The result? XP is now notably less safe to take online than it once was.

The counter-argument is that it's less irritating to use, and it's true that Vista's User Account Control (UAC) is too eager to prompt you when you make system changes. However, the idea of limiting what malware can do is a good one and so, although it's much-loathed, UAC does make you safer on the web.

What's more, UAC acts as the foundation for other useful features, including Internet Explorer's Protected mode. This places strict limits on what IE can do, preventing it from writing to most of your hard drive or the Registry without your permission. ActiveX controls, toolbars and other add-ons inherit the same high level of security, so any malware you encounter won't be able to install further nasties.

Windows 7 features a much more customisable UAC that is noticeably less irritating. Multiple security levels mean that you can choose how many alerts you see — so easily annoyed users can pretend that UAC doesn't exist while resting safe in the knowledge that their system is protected from third-party meddling.

Encryption is the other big development in recent years. BitLocker delivers full volume protection in Vista, and Windows 7 extends this to removable devices. Unfortunately, this feature only comes with high-end editions of Windows, so low-end Windows 7 and Vista users will be in the same position as their XP cousins.

The real value of modern Windows security comes in its low-level changes, though. System services are more isolated and run with fewer privileges, reducing the damage that malicious code can do. A new TCP/IP stack offers improved encryption and authentication options, and Address Space Layout Randomisation loads system files as random memory addresses, making it far harder for basic malware to exploit key system functions.

There's no question that Windows Vista is more secure than XP, then. Windows 7 keeps the best Vista features, while adding additional controls to reduce the hassle of UAC and Security Center alerts, making it the marginal victor here.

XP ★★★
Vista ★★★★
Windows 7 ★★★★½

FACT FILE

Microsoft has announced that only customers who buy PCs preinstalled with Windows 7 will have the right to downgrade to Vista, or even Windows XP, if they run into problems. You probably won't, but it's good to know.

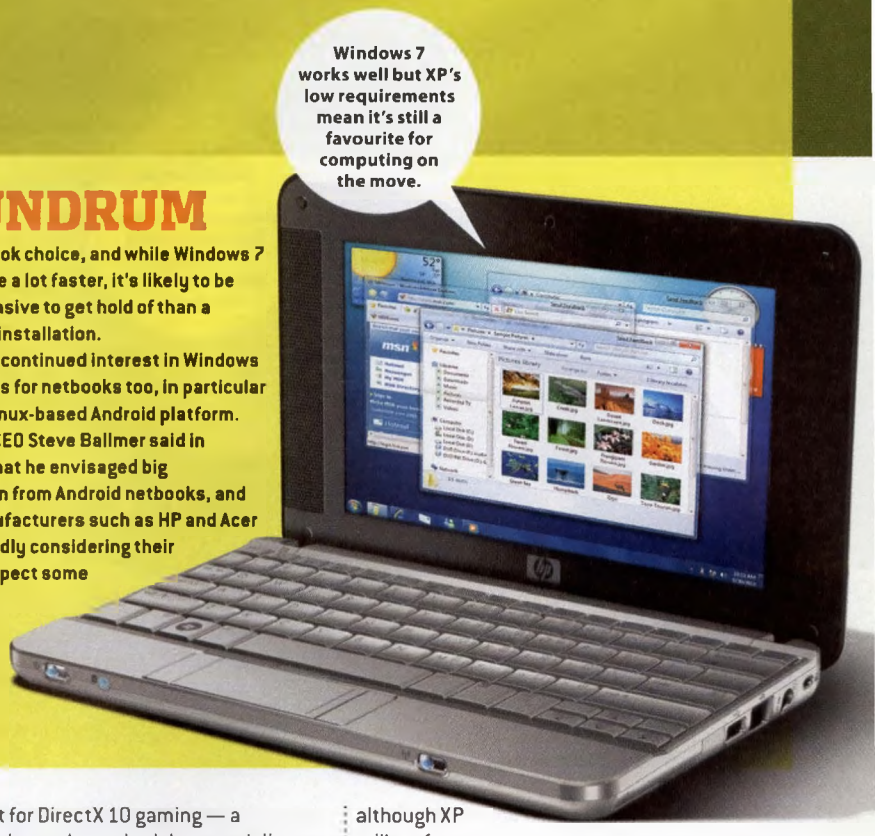
SYSTEM REQUIREMENTS

Some people say that Windows has become bloated. Others argue that it's just taking advantage of modern hardware to deliver new features.

Whatever the truth, there's no doubt that the latest versions of Windows place far heavier demands on your PC than ever before. Windows XP Professional, for example, requires a 300MHz CPU, 128MB of RAM and 1.5GB of hard drive space. By contrast, the Home Premium Edition of Windows Vista needs a 1GHz CPU, 1GB of RAM and at least 15GB of free hard drive space: a massive increase.

It's not all bad news, though. Windows 7 has virtually the same system requirements as Vista, and by most reports runs noticeably better on low-spec machines. Is this just a snap reaction to Vista criticisms, or will the new and more efficient approach carry on into future versions of Windows? Watch this space.

THE NETBOOK CONUNDRUM



The arrival of netbooks was supposed to be great news for Linux. Windows was too expensive and too bloated to deliver acceptable performance, analysts claimed, so free and lightweight solutions such as Ubuntu would be much more suitable. The reality seems to be a little different. According to an NPD Retail Tracking report cited by Microsoft executive Brandon LeBlanc, Windows' share of the netbook market increased from 10 per cent of unit sales in the first half of 2008 to a far more dominant 96 per cent by February 2009 (*www.tinyurl.com/cumxxh*). It's good news for Microsoft, then, but the battle may not be over just yet. Many netbooks use Windows XP because it's cheaper and delivers decent performance on the hardware, but the operating system is about to be retired, so using it will no longer be possible. Given its requirements and performance issues, Windows Vista really isn't a good netbook choice, and while Windows 7 seems to be a lot faster, it's likely to be more expensive to get hold of than a current XP installation.

There's continued interest in Windows alternatives for netbooks too, in particular Google's Linux-based Android platform. Microsoft CEO Steve Ballmer said in February that he envisaged big competition from Android netbooks, and major manufacturers such as HP and Acer are reportedly considering their options. Expect some interesting Android product news in the next few months.

4 GAMING

A fundamental requirement for any gaming PC is that it should be able to run all of your favourite games. Even though it was replaced some time ago, Windows XP remains the best choice for compatibility. Just about every major new release is written to run on XP, and there's a good chance that it will run older DOS games, too.

It's a similar story when it comes to joysticks, gamepads and other accessories. Most new hardware comes with drivers supporting XP as well as Vista. XP users also have access to a wide range of older kit that may never see drivers released for newer OSs.

This doesn't mean that Windows Vista users are deprived, of course. You can still run a plethora of old games — we've even found one or two ancient examples where Vista proved more compatible than XP — and there's no shortage of compatible gaming accessories.

What's more, Vista and Windows 7 add support for DirectX 10 gaming — a graphics and sound standard that can deliver new effects, better image quality and should improve performance in compatible games (assuming you have a DirectX 10 graphics card).

We say 'should' because Vista has performance issues and doesn't make the best of RAM — a real problem when you're playing more demanding games. Does Windows 7 improve the situation? Our first tests didn't give clear answers: Windows 7 managed the best frame rates when we ran Unreal Tournament 3, but XP won out in our Company of Heroes tests (a shame-faced Vista came last each time).

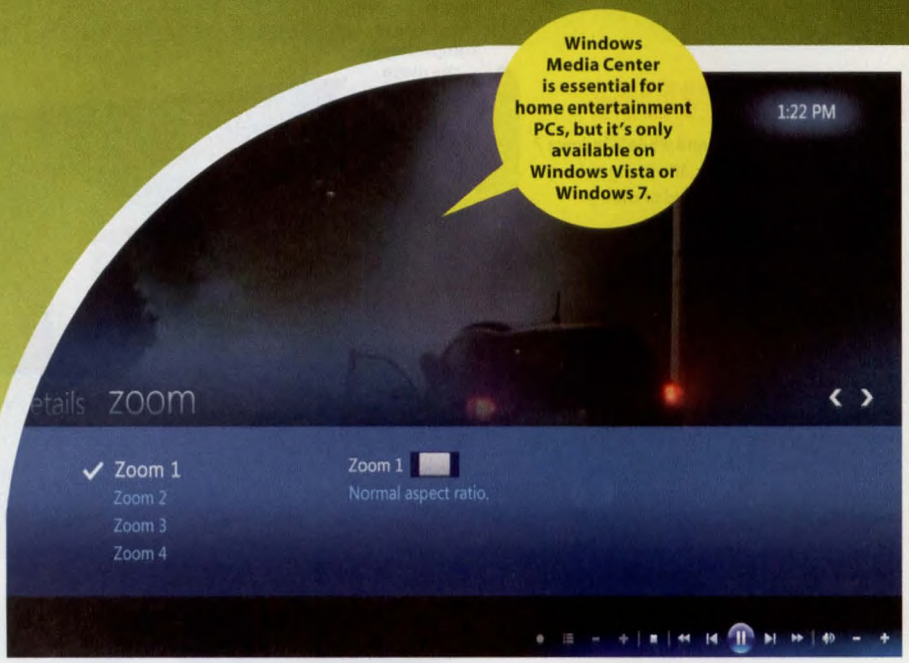
What we can say is that Windows 7 performed really well for a pre-release version and should be faster still by the time it's released. The Windows XP advantage also tends to fall away as you use faster hardware. So, if you have a decent mid-range PC, Windows 7 would marginally be our preference for gaming, although XP still performs remarkably well.

XP ★★★★
Vista ★★★
Windows 7 ★★★★

5 MOBILITY

Laptops never quite have the processing power of their desktop cousins, so the relatively lightweight Windows XP seems an obvious pick for your mobile computing needs. It should deliver reasonable performance, even on old or budget systems.

What you won't get by running XP on your laptop is any kind of sophisticated power management, which in theory should have an adverse impact on your battery life. As ever, though, it's not quite as simple as that. Yes, Windows Vista can tweak your wireless adaptor, PCI Express bus, USB suspend options and more



END OF THE ROAD?

Windows XP is finally being phased out. Retail copies have been unavailable for a while and even PC manufacturers won't be able to purchase it later this year (although availability might be extended further to 2010).

Significantly, Microsoft also ceased mainstream support recently. XP will receive security patches up to 14 April 2014, but other fixes will only be provided to companies with Microsoft support contracts.

This means that XP won't receive any more functional enhancements: if a problem appears that isn't related to security, it's not going to be fixed. This might not be a big deal to netbook users, but if you have more complex needs, it might be time to move on.

to reduce overall power consumption, but a large number of users still report that their laptop's battery life is significantly increased under XP. It seems that the increased CPU use from running Vista's extra features will often cancel out any benefit from its power management controls. That's been more than a little embarrassing for Microsoft, but at least the company has learned from the experience. Windows 7 takes a more in-depth approach.

The focus is now on idle time. The typical laptop will spend most of the time just idling while it's waiting for something to do, so reducing the power consumption at this stage can make a real difference to battery life. With this in mind, Windows 7 makes considerable efforts to reduce repeated background activities in Windows, drivers and applications. In addition to this, Windows 7 services will often start only when they're required (Bluetooth won't be launched until a Bluetooth device is attached, for example). Best of all, a new core parking scheme turns off all but one CPU core when there's little to do, saving a significant amount of power when you're only performing simple tasks.

The end result, according to our informal tests, is that Windows 7 appears to deliver even longer battery life than XP. We can't say that definitively yet — there are too many factors involved and our test group is too limited — but it's looking promising, and we think it's likely that the disappointments of Vista will be forgotten soon after 7's launch.

Once you've also taken into account its excellent performance, relatively low system requirements and the advantages of being able to use its simplified networking while you're out and about, Windows 7 has to be the standout winner of our Mobility category. Windows XP takes a respectable second place for being handily lightweight, which makes it more than suitable for extensive on-the-go use. Meanwhile, Windows Vista's performance issues and its selection of well-meaning but ineffective power saving features means that it comes trailing into a dismal third place once again.

XP ★★★½
Vista ★★½
Windows 7 ★★★★

ENTERTAINMENT

If you're looking to create a specialist entertainment PC, Windows XP could be a reasonable choice. It demands little in the way of memory or CPU power, for example, so it will run well on the majority of older systems. Yet it's still highly compatible with all the hardware you might need: TV tuner, wireless networking adaptor, memory card reader and so on.

There's surprisingly little software support within XP, though, probably because Microsoft nived off most entertainment features into Windows Media Center (WMC). So if you want WMC-like functionality — such as the ability to watch and record TV, manage your music collection or browse your digital photos — then you'll have to opt for a third-party tool. We recommend the free MediaPortal (**www.team-mediaportal.com**). It's a remarkably powerful program, but be aware that it does occasionally throw up glitches.

Opt for Windows Vista instead and you'll get Windows Media Center thrown in (with the Home Premium or Ultimate editions, anyway), and that makes a huge difference. Hardware manufacturers know that Media Center is the biggest player in the entertainment PC world right now, so they take a lot of care to ensure that their products are compatible. This means that you're less likely to have codec problems. Vista extras such as improved networking connectivity, Windows DVD Maker and HD support in Movie Maker are welcome, too.

Windows 7 takes this a step further with improved support for HD displays, including the ability to calibrate a screen to ensure it's accurately reproducing colours. It's easier to share your media files around a home network, and the touch interface support makes sure that everything is easy to use (for those with touchscreen hardware, anyway). However, we'd bet that your budget for an entertainment PC is limited and that you won't want to experience the driver-related issues that Windows 7 is bound to throw up in its first few months. So, while Windows 7 is bound to be a future winner, it's overkill at the moment.

Our entertainment pick right now, then, is Windows Vista. It runs reasonably well on budget PCs, any performance issues it has won't be a big deal for an entertainment system (with the possible exception of network transfers) and there's plenty of compatible software and hardware available.

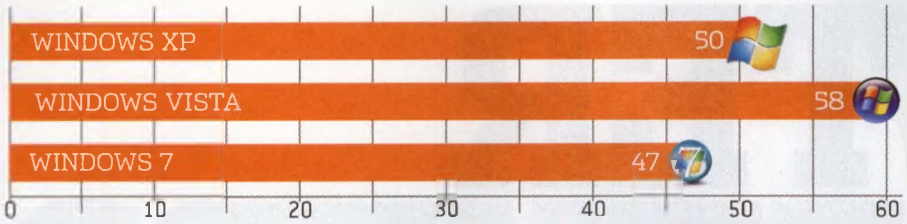
Meanwhile, Windows 7 is the best pick if you've got lots of money to spend or a HD touchscreen to hand and don't mind the occasional delay when you discover that your TV tuner (or some other piece of kit) doesn't work quite as it should on the new system. If your budget is limited, opt for XP instead. Shop around and you can put together an excellent entertainment system for a little cash.

BENCHMARKS

Spec for spec, how the three OSs stand up:

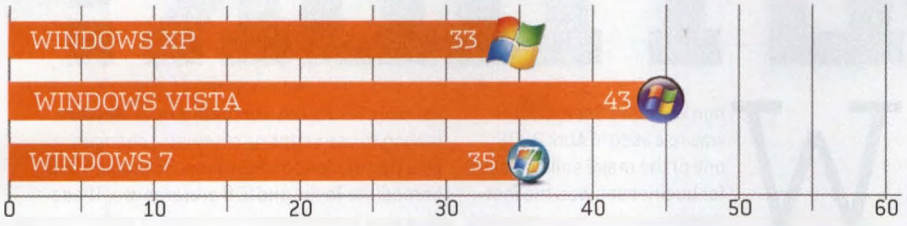
BOOT TIME

Measured in seconds. Lower number is better.



SHUTDOWN

Measured in seconds. Lower number is better.



FURTHER TESTS

TEST			
Copy several 1MB files	51	58	49
Copy several 1GB files	104	96	94
Network copy 1MB files	76	87	79
Network copy 1GB files	150	138	136
Rip audio CD	114	120	121
Burn data DVD	184	199	187
GAMES			
Company of Heroes (fps)	28	22	25
Unreal Tournament 3 (fps)	31	28	33

Games: fps stands for frames per second, higher is better.
Test machine specs: Intel dual-core E5200 CPU, 2GB of RAM, ATI Radeon HD4550 graphics card, 500GB HD.

XP ★★★½
Vista ★★★★
Windows 7 ★★★

7 RELIABILITY

Whatever else you want from an operating system, reliability is essential. Defining exactly what that means can be tricky, though, as there are many different factors to consider. A reliable operating system has to be well understood by developers, for instance, and here Windows XP is in its element. It's mature, it's built around classic Windows NT kernel technology and there are many development tools around to help produce quality applications.

Reliability also requires weak points to be addressed, however — and Windows Vista does implement some important new ideas. Windows XP, for example, allocates system memory for device drivers, file cache, kernel stacks and other requirements at boot time. If, say, it turns out that your drivers need more RAM later, then that's just tough: they'll have to do without, usually with catastrophic results. Vista can manage its system memory dynamically, freeing up RAM in one area when more is required elsewhere, reducing the chance of driver-related crashes.

Of course, a really buggy application is going to fall over at some point anyway, so a reliable operating system must also provide ways to track errors, diagnose problems and find out what's going on. It's here that Vista really wins out over XP. Crash data is saved, allowing you to view your system stability over time. A greatly improved Event Viewer is more likely to identify the cause of your problems, and Windows can regularly check for new fixes that might prevent particular crashes.

Windows XP wins in terms of stability and maturity, then. But the majority of problems are caused by bugs in drivers and applications, not core Windows code, and so Vista's superior error handling and reporting is extremely important. When you also factor in a selection of low-level changes, such as improved memory management and the ability to recover from failures like broken services or corrupt system files, then Vista (despite all its quirks) just scrapes into first place for this category. Our award is for a strictly limited time, though, as we'd anticipate Windows 7 moving swiftly into the top spot once its understandable teething problems are ironed out.

FACT FILE

Microsoft is already starting work on Windows 8 and talking to major customers about their needs. The best guess so far is it'll be a more substantial upgrade than Windows 7 and released around Christmas 2011 (or 2012, or 2013).

XP ★★★
Vista ★★★½
Windows 7 ★★★

8 CONCLUSION

We've spent a long time poking, prodding and stress-testing these three operating systems, but it's still remarkably difficult to pick the outright best of Windows XP and Vista. XP is mature, still current enough to be compatible with most recent hardware and software, and a good all-round performer. But Vista fights back with a much better feature-set, especially in key areas such as security and error handling. On balance, we prefer XP for basic systems and would move to Vista only as hardware needs demanded — but that's a fine line to tread.

The good news is that you won't have to spend long agonising over the whole 'XP or Vista?' decision, because Windows 7 generally outdoes them both. Microsoft really does appear to have learned its hard-taught lessons and, while it hasn't fixed everything, the latest Windows does show significant improvements over its predecessor — impressive for a pre-release version. The finished Windows 7 can only be better, and it should finally give long-standing XP fans a reason to upgrade.

BETTER TOGETHER?

James Bannan takes a look at how well Windows Server 2008 R2 and Windows 7 work together.

When Windows Server 2008 was released in April 2008, one of the major selling points for businesses was the fact that it was the recommended platform for supporting Vista in the enterprise. Built on the same underlying technology, with the release of Vista SP1, Microsoft's desktop and server platforms were now operating at the same kernel level and able to leverage better off one another. This was a very important step for businesses to have confidence when considering Vista as an enterprise platform — supported by Server 2008, Vista could be managed easily and take advantage of its new security and networking features.

Microsoft's 'Better Together' marketing campaign has been around for a few years, but the Server 2008/Vista SP1 relationship brought it out into the spotlight, primarily because the client technology was so prominent in the media at the time. And it looks like the concept will be with us for some time, with the upcoming release of Windows Server 2008 R2 and Windows 7. These two OSs are designed to work together, and there are features of both which can only be unlocked in an environment running both platforms.

MANAGEMENT

An important requirement for any organisation is the ability to have complete control over deployed machines. Windows achieves this via Group Policy Objects (GPOs) in Active Directory, and as new products come online this technology is extended to meet them. Windows 7 is completely controllable via GPOs on Server 2008 R2, which have also been expanded to include some new features, including Group Policy Preferences. These GPOs allow you to control client-side user preferences without having to use scripting or registry changes, plus power plan configuration, Scheduled and Immediate Tasks and IE 8 preferences. These changes are backward-compatible with Vista, and are also all accessible via Remote Server Admin Tools (RSAT) for Windows 7 and Vista SP1.

VIRTUALISATION

Server 2008 R2 will ship with Hyper-V 2.0, the next major release of Microsoft's virtualisation platform. It offers very nice new features like Live Migration of virtual systems, but in the context of server/client it offers a much richer virtualisation experience for Windows 7 client systems. Remote App & Desktop (RAD) technology allows admins to deliver bundles of virtual applications and desktops to end users via resource feeds accessible from a Control Panel interface. The virtual desktop experience has been vastly improved, with Aero Glass support, multimedia redirection, multi-monitor support and DirectX — the idea is to make the virtual experience as close to the physical as possible. The advantage for admins is the ability to deliver seamless apps and resources to users that are actually centrally stored and managed, which saves time and resources in deploying and patching software on remote systems.

DIRECTACCESS

If you want to give your mobile users secure, direct access back into the corpnet, this inevitably involves setting up some sort of VPN solution. Depending on your environment and how paranoid you are about security, this can get not only cumbersome but quite costly and difficult for both end user and support technician. DirectAccess allows remote Windows 7 systems

to seamlessly connect back to a Server 2008 R2 system using IPSec and access intranet resources. The advantage of DirectAccess is that the end user doesn't need to run any client software or provide extra authentication credentials — the system negotiates security with the host server. This means admins can treat remote Windows 7 systems as if they were locally connected, deploy GPOs before login and remotely administer the machine.

BRANCHCACHE

For organisations with branch offices, giving remote users access to centralised resources can be an expensive business. The more they need to access the more WAN links degrade, resulting in frustration and lost productivity. The only way around this is to upgrade the links or duplicate infrastructure, both expensive propositions. With BranchCache, when a Windows 7 client accesses data from a Server 2008 R2 fileserver, a copy of the file is cached locally at the remote site, either on a dedicated BranchCache server or on the Windows 7 system that originally requested the data and served out peer-to-peer. In either case, subsequent requests for the same file are handled locally rather than each request generating a unique call across the WAN.

IMPROVED WINDOWS SEARCH

Vista was the first Windows OS with integrated indexing and searching, designed to allow users to quickly find files on their systems regardless of location. Windows 7 goes further with Federated Search, which lets Windows 7 systems search remote document repositories, servers, Sharepoint sites or external web sites using OpenSearch. Using Server 2008 R2 GPOs, admins can define search criteria and deliver them to users' desktops.

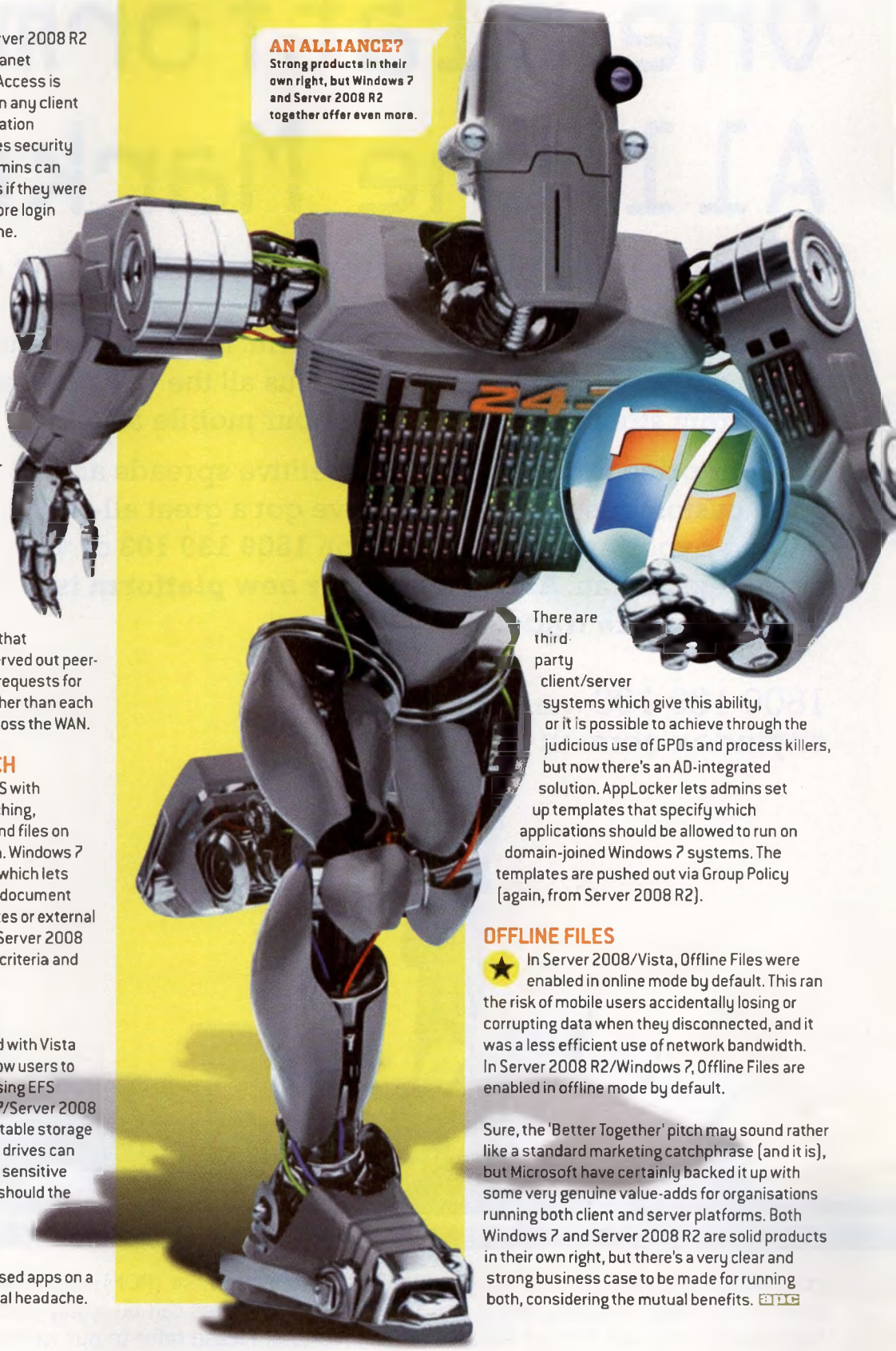
BITLOCKER ENHANCEMENT

BitLocker was first introduced with Vista and has been expanded to allow users to encrypt all physical system disks using EFS (Encrypted File System). Windows 7/Server 2008 R2 allows admins to ensure that portable storage devices like USB hard drives or flash drives can also be encrypted to guarantee that sensitive corporate data is not compromised should the portable device be lost or stolen.

APPLOCKER

Trying to stamp out unauthorised apps on a corporate network can be a real headache. There are third-party client/server systems which give this ability, or it is possible to achieve through the judicious use of GPOs and process killers, but now there's an AD-integrated solution. AppLocker lets admins set up templates that specify which applications should be allowed to run on domain-joined Windows 7 systems. The templates are pushed out via Group Policy (again, from Server 2008 R2).

AN ALLIANCE?
Strong products in their own right, but Windows 7 and Server 2008 R2 together offer even more.



OFFLINE FILES

In Server 2008/Vista, Offline Files were enabled in online mode by default. This ran the risk of mobile users accidentally losing or corrupting data when they disconnected, and it was a less efficient use of network bandwidth. In Server 2008 R2/Windows 7, Offline Files are enabled in offline mode by default.

Sure, the 'Better Together' pitch may sound rather like a standard marketing catchphrase (and it is), but Microsoft have certainly backed it up with some very genuine value-adds for organisations running both client and server platforms. Both Windows 7 and Server 2008 R2 are solid products in their own right, but there's a very clear and strong business case to be made for running both, considering the mutual benefits.

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howto

PROJECTS, TIPS AND TRICKS

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WORKSHOP

HOW TO TWENTY STEPS TO A FORT KNOX PC

Make your PC impenetrable with our top security tips. We've compiled a list of 20 tips designed to give you a more secure computing environment.

96

84 quicktips
HELP AND ADVICE

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The best tip each month from now on wins an Earth Smart powerboard worth $199, which not only provides superior surge protection but significantly reduces wasteful standby power. Send your tips to quicktips@acpmagazines.com.au

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APC, its readers and our partner publications can be one giant helpdesk. If you have a technical problem, chances are one of us can solve it.

WINDOWS

RESURRECT YOUR WORD DOCUMENTS

Q For some reason Word crashed the other day, forcing me to quit and therefore lose all of the work that I was doing at the time. Is there any way that I can resurrect my efforts in whole or even in part? I use Word 2003, and my problem is that I hadn't saved the file I was working on at all.

Had I done so, I might at least have been able to drop back to an older version of the document. As it is, I fear that all is lost. Any help that you can give me with this would be gratefully received as I'm desperate to retrieve my work!

Nathan Peacock

A We're pleased to say that there is hope for your data! First, check to see if Word is configured to create back-up copies. Do this by navigating to 'Tools > Options' and looking for the 'Always create backup copy' setting, which is located on the Save tab. If the option is enabled, you're in luck. Just do a Windows search for '*.wbk' for a list of all the backed up files that are available.

If this doesn't work, don't worry just yet: there is another option. The most reliable method of recovering a document is to try and pluck your data from a temporary file. To do this, do a Windows search for '*.tmp' files. As your computer creates lots of temporary files, there will be a lot of results for this search. Narrow your search down to ones that were created on the day that the crash happened.

If you find a file that sounds like the one you're after, you'll need to use Word's Open and Repair features to get hold of it. You can find a description of them here: **http://support.microsoft.com/kb/827099**. Good luck!

MUSIC

ITUNES DOESN'T RECOGNISE OTHERS

Q It really annoys me that iTunes won't recognise other music. Is there some way of making it automatically recognise folders instead of me having to add them manually?

A You can set up a free Windows utility iTunes Folder Watch (**tinyurl.com/awho2t**) to monitor folders into which you drop new music or videos. Soon after new

WINNERS GET THIS

The Earth Smart multi-plug power board completely turns off all connected standby power when the main device is switched off, while simultaneously protecting all devices connected to the power board in the event of power surges and spikes.

Retailing for $199, the Earth Smart powerboard is available from leading electronics retailers. For more information and retail outlets visit **www.crestonline.biz** or contact Crest on 1800 812 261.

digital content is placed in the watched folders, iTFW alerts you that it's added the songs to iTunes.

MOBILE

BLACKBERRY VIDEO

Q I've got a BlackBerry but can't seem to edit my videos so that they play full screen at a decent quality. How should I best format a video file for BlackBerry?

Tim Rathbone

A You don't specify what BlackBerry you have, but, say it's the BlackBerry Bold, you need to save your video at 480 x 320 resolution in 3GGP format to get the best viewing experience.

WINDOWS

GETTING RID OF OLD JAVA RUNTIMES

Q Whenever I look at my installed programs, there always seem to be several versions of the Java runtime. Are all of these needed or can I safely delete some of them?

Ethan Weston

A No, these outdated files are not required by your computer, and yes, you can safely delete them all. Just ensure that you keep the runtime with the highest version number. A handy utility called JavaRa can keep you updated with the newest version of Java as well as ensuring that all previous ones are removed. Grab it from **www.raproducts.org**.

INTERNET

PLANETINACTION.COM

One of the coolest plug-ins we've seen for Google Earth is Ships. Developed by New Zealand company, Planetinaction.com, Ships is a browser plug-in that lets you navigate the 3D environment with a selection of ships, ranging from barges and ocean liners to airships. It's a hoot, a kind of cheap flight simulator that takes you to real places.

INTERNET

BROADBAND USAGE MONITORING

Q My broadband plan gives me an allowance of 10GB each month, which isn't enough, so I keep getting billed for going over. Rather than upgrade to the next option, is there any way that I can track my usage in order to stay under the 10GB limit?

Barry Caufield

A There's a very handy free utility called NetMeter available for download from **www.metal-machine.de/readerror**. It comes with many useful options, including bandwidth alerts. These can be set to warn you if you go over a preset limit, so try setting it to 9GB so that you know when the limit is approaching.

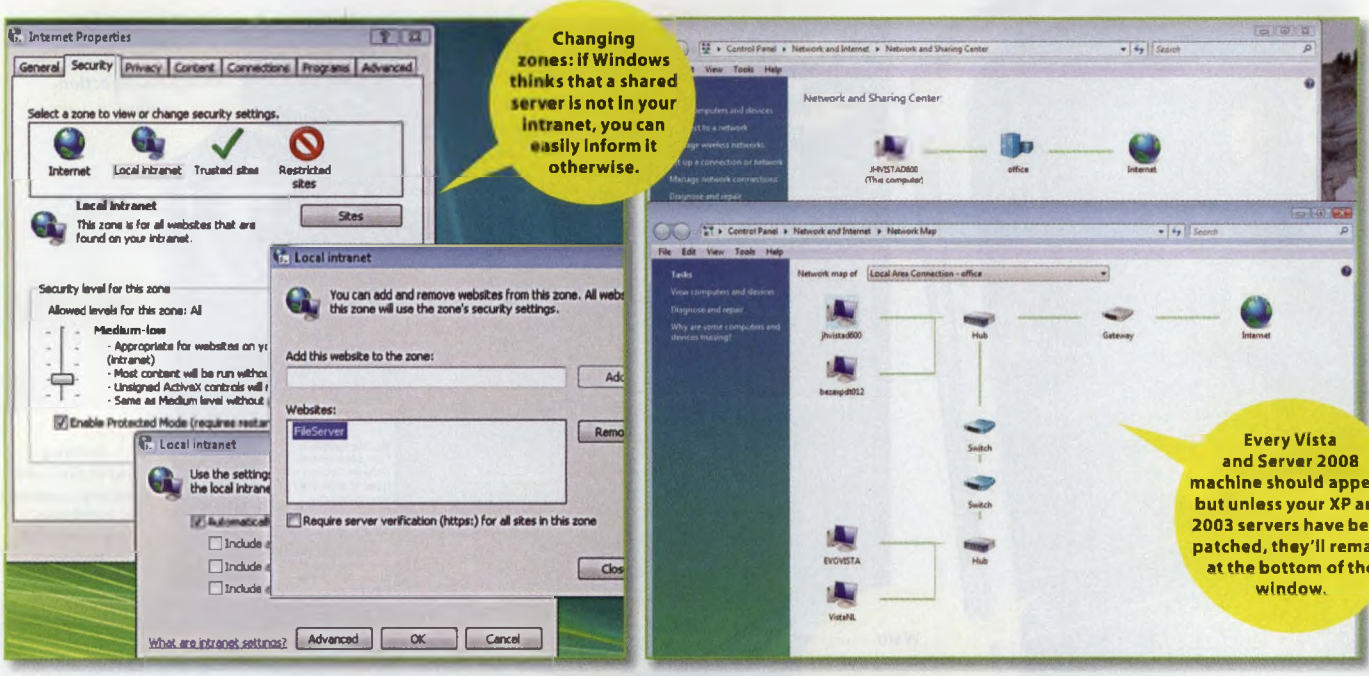
If you have more than one PC connected to your broadband, install NetMeter on each of them and set the alerts according to how much of your bandwidth you wish to allocate to each computer. After you've got this sorted, you should be able to avoid upgrading.

WINDOWS

STOP THE SLOWDOWN

Q Is there any way of preventing some processes and that stupid svchost from getting out of hand and slowing down my PC?

A We get asked this question all the time. There's a program called Usage Monitor [**tinyurl.com/owx3av**] that keeps track of processes running on your system and alerts you when one is starting to


Changing zones: if Windows thinks that a shared server is not in your intranet, you can easily inform it otherwise.
Every Vista and Server 2008 machine should appear, but unless your XP and 2003 servers have been patched, they'll remain at the bottom of the window.

use up too much memory. That way you decide whether to keep it running or shut it down. And as for svchost, there's a program called Svchost process analyser that tells you in great detail what services are contained by the svchost processes that are running on your machine.

WINDOWS

CHANGING ZONES

Q Whenever I right-click on a ZIP file that's on a network drive, it brings up an Internet Explorer dialog box that displays this message: 'This page has an unspecified potential security risk. Would you like to continue?' What does this mean, and why does it occur?

Joe Wallace

A This dialog box appears because Windows thinks that your network share is in the Internet Zone rather than the Intranet Zone. You can easily correct this by calling up the Control Panel and selecting 'Internet Options' followed by 'Security'. After this, select 'Local Intranet' and click on the button labelled 'Sites'. When the new window pops up, click on the button labelled 'Advanced' and a third window will appear. This is where you can tell Windows which shared servers are on your intranet, even though the prompt says 'Add this web site to the zone'. So, if your network drive is called 'FileServer', enter that name and then click on the button labelled 'Add'. You can now click on the 'Close' button, followed by 'OK' twice, to close all three windows. Once this is done, you won't be bothered by the security prompt again.

WINDOWS ADMIN

HIDDEN ON THE NETWORK MAP

Vista's network map makes a pretty good stab at discovering devices attached to the network and linking them together in a simple topology. Every Vista and Server 2008 machine will (or should) appear, but unless your XP and 2003 servers have been patched, they'll remain at the bottom of the window. The reason for this is that, by default, XP does not install the LLTD (Link Layer Topology Discovery) protocol. LLTD is a L2 (OSI Layer 2) implementation that provides other devices with network topology and Quality of Service diagnostic information. Being a Level 2 implementation, it can't work across a router and is only able to provide information across the subnet. XP machines with Service Pack 3 installed will have LLTD already. XP machines without SP3 need to download the LLTD responder from the Microsoft Download Centre (KB922120). Microsoft does not support LLTD on Server 2003 and installing the XP update will produce an error.

HARDWARE ADMIN

PUSH PRINTERS

Push Printers is a neat way of deploying printers to a group of computers. This tool is a feature of Server 2003 R2. Windows Vista PCs are already set up to receive this policy but Windows XP PCs will need Group Policy extensions. These are included in Windows Update KB943729 (a feature pack, if your updates are distributed via WSUS). Push Printers is used with the new Print Management Console. This provides a central environment for managing all printers in the domain. Alongside the Print Management Console, Push Printers is used to deploy printers to either users or computers using Group Policy. Add 'pushprinters.exe' to either a start-up script (per computer) or a log-in script (per user installation). When Push Printers is executed, it reads printer information provided by the Print Management Console from Group Policy. If the installation is per printer, the installed printers will be available to all users of the computer. If the installation is per user, the printers will follow the user. The advantage of using Push Printers over scripts or batch files is that the utility does not need modification per policy. The role of the utility is to read settings contained in a central location. Scripting does not have to be enabled on the host computer.

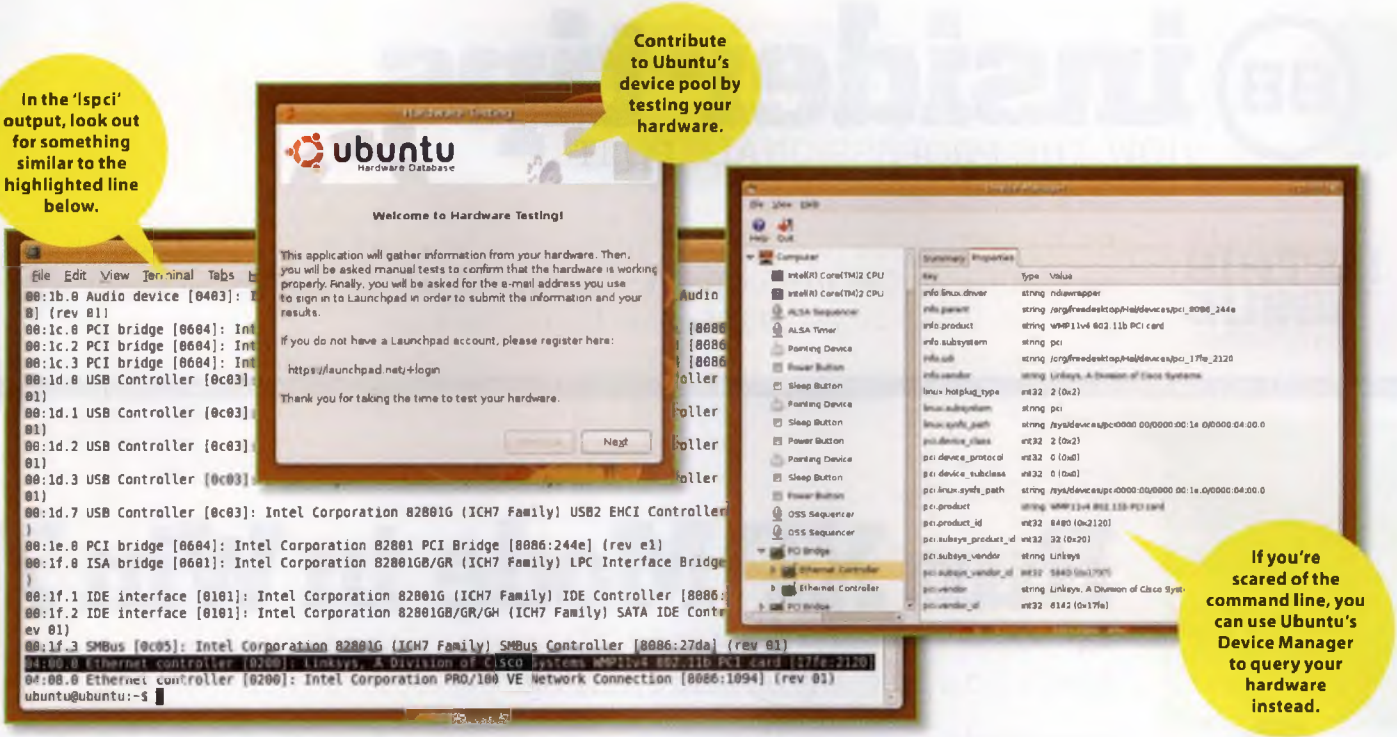
LINUX

GET YOUR WIRELESS CARD WORKING IN LINUX

Q I've just installed Ubuntu Linux on my desktop. The installation was smooth except that Ubuntu complained that it had trouble contacting my router and couldn't get updates from the internet. Since I could get these later, I continued with the installation process. However, it turns out that Ubuntu couldn't install my old Netgear WG111 wireless adaptor. Will I have to buy a new card for Linux?

Jo Duncan

A Oh no, absolutely not! Linux supports a good number of devices, and wireless cards are often supported out of the


In the 'lspci' output, look out for something similar to the highlighted line below.
Contribute to Ubuntu's device pool by testing your hardware.
ubuntu
Hardware Database
Welcome to Hardware Testing!
This application will gather information from your hardware. Then, you will be asked manual tests to confirm that the hardware is working properly. Finally, you will be asked for the e-mail address you use to sign in to Launchpad in order to submit the information and your results.
If you do not have a Launchpad account, please register here:
https://launchpad.net/+login
Thank you for taking the time to test your hardware.
Next
File Edit View Terminal Tabs
00:1b.0 Audio device [0403]:
00:1c.6 PCI bridge [0604]:
00:1c.2 PCI bridge [0604]:
00:1c.3 PCI bridge [0604]:
00:1d.0 USB Controller [0c03]
00:1d.1 USB Controller [0c03]
00:1d.2 USB Controller [0c03]
00:1d.3 USB Controller [0c03]
00:1d.7 USB Controller [0c03]: Intel Corporation 82801G (ICH7 Family) USB2 EHCI Controller
00:1e.0 PCI bridge [0604]: Intel Corporation 82801 PCI Bridge [8086:244e] (rev e1)
00:1f.0 ISA bridge [0601]: Intel Corporation 82801GB/GR (ICH7 Family) LPC Interface Bridge
00:1f.1 IDE interface [0101]: Intel Corporation 82801G (ICH7 Family) IDE Controller [8086:
00:1f.2 IDE interface [0101]: Intel Corporation 82801GB/GR/GH (ICH7 Family) SATA IDE Contr
00:1f.3 SMBus [0c05]: Intel Corporation 82801G (ICH7 Family) SMBus Controller [8086:27da] (rev 01)
04:00.0 Ethernet controller [0200]: Linksys, A Division of Cisco Systems WMP11v4 802.11b PCI card [17fe:2120]
04:08.0 Ethernet controller [0200]: Intel Corporation PRO/100 VE Network Connection [8086:1094] (rev 01)
ubuntu@ubuntu:~$
If you're scared of the command line, you can use Ubuntu's Device Manager to query your hardware instead.

box. I use wireless TP-Link USB dongles and Cisco USB adaptors on my computers, and I've never had a Linux distribution reject them. However, I also have a couple of old Wi-Fi 'B' PCI cards from Linksys and an Acer with a built-in Broadcomm wireless device, neither of which worked out of the box. With new faster standards, and new devices for them being churned out in their thousands, it's obvious that developers will concentrate on the more recent devices. That doesn't mean that you've got to chuck older cards out for the new, faster ones, of course, but getting unsupported wireless cards to work requires a little effort.

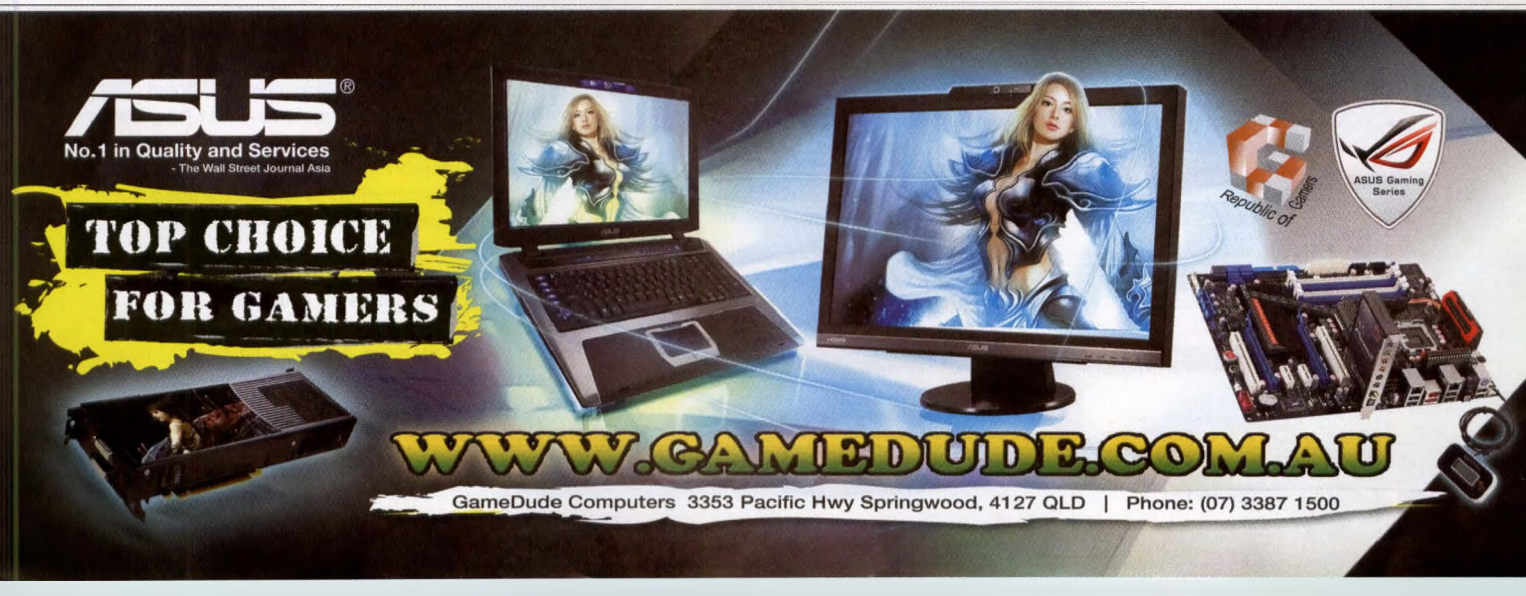
First, you need the Windows drivers for the card. If you have them already, skip ahead. If you don't have the drivers, fire up a terminal and type 'lsusb' if your wireless device is USB or 'lspci –nn' if you've installed it into a PCI slot. Both commands spew a lot of information, with lspci being the more verbose. In the output, look for the line that lists your wireless card. On my box with the Linksys USB device, this is what I'm looking for: 'Bus 002 Device 002: ID 13b1:000d Linksys WUSB54G Wireless Adaptor'. For the PCI card, I'm looking for this: '04:00.0 Ethernet controller [0200]: Linksys WMP11v4 802.11b PCI card [17fe:2120]'.

It might look like a collection of random text and numbers, but there's some logic here. Keep an eye out for the series of eight-digit alphanumeric characters separated by a colon ('13b1:000d' and '17fe:2120' in the listing above). These numbers indicate the device and vendor of the chipset inside your wireless card. Let me digress to point out the manufacturer whose logo is on the card probably didn't make the chipset. The chipset is just one component that it bought from another company and assembled. Don't be surprised if your Netgear and Cisco cards both use the same chipset.

When you have the colon-separated device and vendor code, try looking for the drivers on the web either via Google or through the slightly outdated NDISwrapper wiki. If that's too much work, use the Auto-NDISwrapper tool, which is designed to help you find the drivers for your card without much fuss. The only downside of this project is that it's developed by university students who only work on it during their summer breaks.

Whichever way you go about it, when you've got the drivers, fire up your distro's package manager (Synaptic for Ubuntu) and search for and install 'ndisgtk', which is a front end for NDISwrapper. It will automatically pull in NDISwrapper as a required dependency. Once the installation is complete, look for NDISwrapper under the System menu. In Ubuntu, it's the 'Windows Wireless Drivers' entry under the 'System > Administration' menu.

Now click on the 'Install New Driver' button, point it to the '.inf' file for your Windows driver and click 'Install'. If you've selected the correct driver, you'll find your card listed under the 'Currently Installed Windows Drivers' list. Now click on the 'Configure Network' button and set up your wireless network using the newly added wireless card.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88 insider tips

HOW THE PROFESSIONALS DO IT

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WINDOWS VIEW

Run XP Mode in Win 7

XP Mode lets you use legacy XP apps on Windows 7 — here's how to get it up and running.

APC EXPERT

JAMES BANNAN

James Bannan is a systems manager at St Leonard's College (Vic) and *APC*'s resident Windows expert.

Windows XP Mode is a newly-announced feature for Windows 7 that lets users run a virtual copy of Windows XP SP3 on Virtual PC. The VM is run in the background while applications are streamed onto the Windows 7 desktop — great for supporting legacy apps and testing. XP Mode is available to the public before Windows 7 goes RTM, so you can download and install it now.

Go to **www.microsoft.com/windows/virtual-pc/** and click on 'Get Windows Virtual PC Beta now'. Before downloading anything though, make sure that your system supports either Intel or AMD hardware-assisted virtualisation. Microsoft has made some resources available to help, or you can contact the vendor directly. Many systems do support it, but have it disabled by default in the BIOS.

On the download page, choose the build which is appropriate for your Windows 7 system — either 32-bit or 64-bit. Download and install Virtual PC Beta, and then XPM Beta. In the Start Menu you'll now have a new item — Windows Virtual PC. Click on 'Virtual Windows XP' and the virtual machine will initialise for the first time and launch. You'll be prompted for user credentials (which are unique to the VM) and the system loads. At this stage the VM is just a new install of Windows XP Professional SP3, customised for US regional settings and with all the default options turned on. The Virtual PC Integration Components are pre-installed, so the system is fully-functional.

In the Virtual PC window there are four menus: Actions, USB, Tools and Ctrl-Alt-Del. The USB menu shows which locally-attached USB devices are available for the virtual system. Click on any of them to connect — the Windows 7 system will then install a 'USB Virtualization Stub Driver' device and the hardware then gets installed in the VM and becomes available for use from virtualised applications.

The Tools, Settings feature lets you customise options and behaviour for the VM. The defaults are fine, but if you want to add more RAM or extra hard drives this is the place to do it. Most options can't be changed while the VM is running. To shut down the VM completely, go to 'Tools > Settings' and change the 'Close' action from 'Hibernate' to 'Prompt for action', then go to 'Action > Close' and select 'Shut down'. Change whichever settings you like, then change the Close action back to 'Hibernate'.

At this point you need to install some apps before the VM will start publishing to the Windows 7 desktop. Any app will do — I used Adobe Reader. Once installed, you'll have a new option in the Windows 7 Start Menu under Windows Virtual PC — Virtual Windows XP Applications — which should contain a shortcut to the app you just installed. Close down the VM first — 'Start > Logoff > Actions > Close' – as you can't launch virtual apps while the VM is still open. Click on the virtual app, the session will initialise and the app will launch — it's being streamed from the VM so it will use the XP UI theme.

To make an application visible in the Virtual XP Applications folder, simply create a shortcut in C:\Documents and Settings\All Users\Start Menu\Programs folder on the VM. The VM will see the filesystem of the host and be able to browse it as a network folder (eg. "C on COMPUTER"), but Explorer shortcuts like My Documents and My Computer point to the VM, not to the host. APC

LINUX WINDOW

In the deluge

If you want a little more control over your torrenting in Ubuntu, check out Deluge.

APC EXPERT

ASHTON MILLS

Editor of the Linux Pocketbooks series, and now with CHOICE magazine, Ashton has been a tech journo for over 13 years, including five years with *APC*.

The default BitTorrent client in Ubuntu is Transmission, which, while quite capable, isn't as fully featured as other GNOME-based clients. And while, like most other Linux applications, there are a wide range of alternatives to choose from, one of the more popular of these, and which some have called to replace Transmission as the default client in Ubuntu, is Deluge.

As far as having a feature-rich torrent client that doesn't get in your way, Deluge pretty much hits the mark. Modelled after the popular uTorrent it sports a clean interface and a wider range of features compared to Transmission. For heavy BitTorrent users, it allows fine-grained control over connections (global and per torrent), bandwidth (global and per torrent), port allocation (including randomising ports), and of course encryption (stream and data). It also supports UPnP, NAT-PMP, DHT and Peer Exchange that's compatible with uTorrent.

It also features a plug-in system, although at the moment there aren't many plug-ins available. This is partly due to Deluge undergoing an architectural change around version 1.0 that nullified some of the older plug-ins. The most important one is there however: blocklist support. You can use the default recommended blocklist, or import your own from a file, automatically updating at a given interval.

And for those times when you just have to know immediately when a torrent has finished, you can set Deluge to email you on completion.

Other features like prioritising first and last blocks, and being able to use compact or full allocation (pre-allocate the entire required space of the file first) bring it inline with mainstream clients under Windows and offer a bit more flexibility over Transmission.

To install Deluge you actually need to look no further than Ubuntu's own repositories. However, the packages included there are usually a version or two behind. Hence, to ensure you have the latest, use the PPA (Personal Package Archive) repository for Deluge. PPAs are repositories often maintained by developers, and are one means of getting cutting-edge packages for your system (for example, packages for the up-coming Ubuntu 9.10 can be found there).

To add the PPA for Deluge for Ubuntu 9.04, Jaunty Jackelope, do the following: head to 'System > Administration > Software Sources' then click on the Third Party Software tab. Hit Add, and enter:

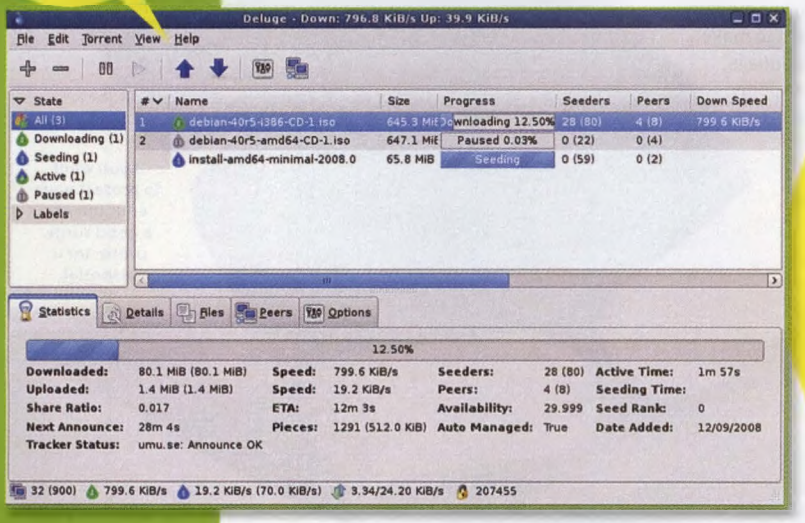
```
deb http://ppa.launchpad.net/deluge-team/ppa/ubuntu jaunty main
```

And click Add Source. Now Close, and you'll be prompted to re-load your sources. As you haven't yet added the public key for the PPA, Ubuntu will warn you this could be an untrusted source. It isn't necessary to add the key to use the PPA, but if you want to prevent the message popping up in future head to **https://launchpad.net/~deluge-team/+archive/ppa** and follow the instructions for adding the key.

Installing is, of course, as easy as running 'sudo apt-get install deluge'. Deluge can then be found under 'Applications > Internet'.

If you're interested to see what other torrent clients are available, click 'Applications > Add/Remove', make sure Show is set to 'All available applications', and search for 'torrent'. Happy torrenting!

Deluge: If it's feature-rich torrenting you're after, this is what you want.


Deluge - Down: 796.8 KiB/s Up: 39.9 KiB/s
File Edit Torrent View Help
State
All (3)
Downloading (1)
Seeding (1)
Active (1)
Paused (1)
Labels
Name Size Progress Seeders Peers Down Speed
1 debian-40r5-i386-CD-1.iso 645.3 MiB Downloading 12.50% 28 (80) 4 (8) 799.6 KiB/s
2 debian-40r5-amd64-CD-1.iso 647.1 MiB Paused 0.03% 0 (22) 0 (4)
install-amd64-minimal-2008.0 65.8 MiB Seeding 0 (59) 0 (2)
Statistics Details Files Peers Options
12.50%
Downloaded: 80.1 MiB (80.1 MiB)
Uploaded: 1.4 MiB (1.4 MiB)
Share Ratio: 0.017
Next Announce: 28m 4s
Tracker Status: umu.se: Announce OK
Speed: 799.6 KiB/s
Speed: 19.2 KiB/s
ETA: 12m 3s
Pieces: 1291 (512.0 KiB)
Seeders: 28 (80)
Peers: 4 (8)
Availability: 29.999
Auto Managed: True
Active Time: 1m 57s
Seeding Time:
Seed Rank: 0
Date Added: 12/09/2008
32 (900) 799.6 KiB/s 19.2 KiB/s (70.0 KiB/s) 3.34/24.20 KiB/s 207455

ALTERNATIVES

WHAT'S THE BEST KDE TORRENT PROGRAM?

There are two good choices here — KTorrent and the lesser known qBittorrent. KTorrent is more feature-filled than Deluge or Transmission (as is often the way with KDE applications), is easy to use and manage, includes a wealth of plug-ins and built-in search engine and integrates beautifully into the KDE4 desktop. qBitorrent doesn't have quite as many features and options as KTorrent but is arguably prettier. Both are great native clients for the KDE desktop.

BUILDING A PC

Choosing the right surge protection

How to pick the right surge protector from so many in the market.

APC EXPERT

GOUGH LUI

Gough Lui is a university student, currently studying electrical engineering. He has worked with computers as a hobbyist since he was young, many times repairing, salvaging, building and servicing his own systems.

Most people take note of the effect of power surges only when their computers and other electronic appliances are damaged by them. A surge is a sharp spike in voltage that comes down the mains power line. A spike can be significantly larger than the mains voltage and cause stress and damage to electronic components. While major surges usually cause instant damage the majority of surges are small and can take their toll on appliances in a cumulative way. Most surge protectors are designed to protect your appliances from these surges but not against direct lightning strike due to the immense currents and voltages involved. Here are my tips on choosing a surge protector.

- Take note of the Joules (J) rating on the specification, which is indicative of how much power the surge protector is able to absorb during a surge. Most basic surge protectors offer between 120 and 370J, which is not adequate for protecting sensitive equipment. I recommend that you look for a surge protector of about 800J or more.
- Also take note of the technologies used and the response time. The most common form of surge protection element is the MOV (Metal-Oxide Varistor), which offers cheap, sacrificial protection, but has a rather long response time of about 20 nanoseconds (ns). The better surge protectors have other forms of protection — such as a Transorb diode, or a gaseous arrestor and can quote times of <1ns. The longer the response time, the more chance of damage to equipment regardless of absorption capability.
- Ensure it covers all entry paths — if you are protecting a computer, and you have a modem and a TV tuner, it would be important to make sure that the phone line and TV antenna is surge-protected as well. There is no point to protecting your power when a surge can enter through another path and damage your equipment.
- Check the terms of warranty — many of the better surge protector boards offer lifetime warranties, which allow you to receive a replacement surge protector if yours fails. Some also offer a connected equipment warranty, which will pay for replacing damaged equipment — however, many of these have terms that are impossible to satisfy, and so I don't recommend that you purchase on warranty alone.
- Also look for a load-disconnect feature, which disconnects your load if the surge protector fails. Many of the surge protectors fail silently, and are not noticed — leaving the door open for more surges. Surge protectors with load disconnection will instead cut the power and force you to replace the protector — thus making sure surges are kept out.
- It is important when purchasing a surge protector to ensure that it comes from a reputable manufacturer. Cheap unbranded surge protectors may not be a surge protector at all.

A surge protector could really save a lot of headaches down the track. HUC

If you want to protect your equipment, a good surge protector is essential.

SOFTWARE

Get VirtualBox to talk to a host PC

A reader asks how to set up his VirtualBox PC to share files with his host PC.

APC EXPERT

ROBIN NIXON

Robin has worked with PCs since the mid '70s. He fondly remembers his first computer: a Tandy TRS-80 with 4KB of RAM.

Q I've set up a virtual computer using VirtualBox so that I can run XP inside my Vista install. I can get online OK, but I'd like to be able to share files with my host machine and have access to network drives. I've tried fiddling with the network settings in VirtualBox and using Shared Folders, but so far haven't had any joy. Are there any settings to make my guest PC work with my local network?

Tony Saberi

A Sun VirtualBox enables you to run virtual desktop or server computers from within your current operating system. It's popular because it costs nothing and provides a wider range of features than many other free apps. Networking with VirtualBox takes a little understanding before you can get the best out of it, though. It's also worth noting that the application is under continual development, so make sure you check that you have the most recent version. At the time of writing, this is VirtualBox 2.2.0.

The virtual hardware generated by VirtualBox includes up to four network adaptors per virtual machine. These can each be set to emulate one of five hardware adaptors, although the default AMD PCNet FAST III works out of the box with most common operating systems. By default, one adaptor is set up to work in NAT mode. You can enable and disable network cards in the settings for your virtual machine as well as change the networking mode or hardware that they use. Your virtual PC needs to be powered off before you can change its settings.

VirtualBox provides five different networking modes for each adaptor. These offer different features, and each has its own limitations. The modes are 'Not attached', 'NAT', 'Bridged network', 'Internal network' and 'Host-only network'. 'Not attached' is the simplest: it means that the network adaptor is enabled but isn't connected to any network, as if an Ethernet cable has been unplugged. 'Bridged networking' enables your guest machine to communicate with your local network. It effectively uses one of your host PC's adaptors, enabling the guest to exist on the physical network. 'Internal networking' has similar features, but is limited to virtual machines that are networked on the internal network. 'Host-only networking' is also similar, but the virtual machines can also talk to the host and the network is limited to machines running on your host PC.

'NAT' is the default setting; it sets up VirtualBox rather like a router, giving the adaptor a local IP address that's different to your external IP and any other machines in your local physical network. It's most useful for users who want a virtual machine that will easily connect to the internet, but it can also cause a few problems. NAT's limitations mean that you can't run ping tests from your virtual machine. It also limits communication with the host PC and local network. Shared folders can help you to transfer your files between host and guest, but you need to map them individually as drives in the guest computer from the command line, so it's much simpler to sort out networking between guest and host.

Bridged networking is the best option in your situation. To enable it open the settings dialog for your virtual machine and choose the 'Networking' option. Next you need to change the setting for the virtual network adaptor to 'Bridged network' in the drop-down list. Finally, select the host network adaptor that you want to use to bridge the connection. If there isn't a local adaptor listed, you can use a workaround to get bridged networking. Choose 'Host-only network' and open up the Network and Sharing Center in your host PC. Next, click on 'Manage network connections', then hold down Ctrl and click on your network connection and the VirtualBox connection. Finally, right-click and choose 'Bridge connections' to get things working as you want. ■ PCC

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SOFTWARE

Create instant web surveys with Google

Google now makes it easy to create forms that solicit and collect customer feedback.

APC EXPERT

JAMES WU
James is a businessman and *APC* reader who's always on the lookout for new technologies that will save his business money.

When I've wanted to get information about customers on my web site in the past I've had to pay a programmer to generate a web-based form for them to fill out. There is now a much easier, zero-cost way: through Google Documents you can generate an online survey form which can be emailed or embedded on your web site. The results are then collected automatically and displayed in a Google Documents spreadsheet.

Don't know about you, but this is manna from heaven for someone like me, who's always trying to get as much information about his customers as possible. Google forms have given me a way of easily collecting data that's proving invaluable for my business. Equally, it could be used to collect information such as wedding or party RVSPs or anything where you need to collect info from lots of people.

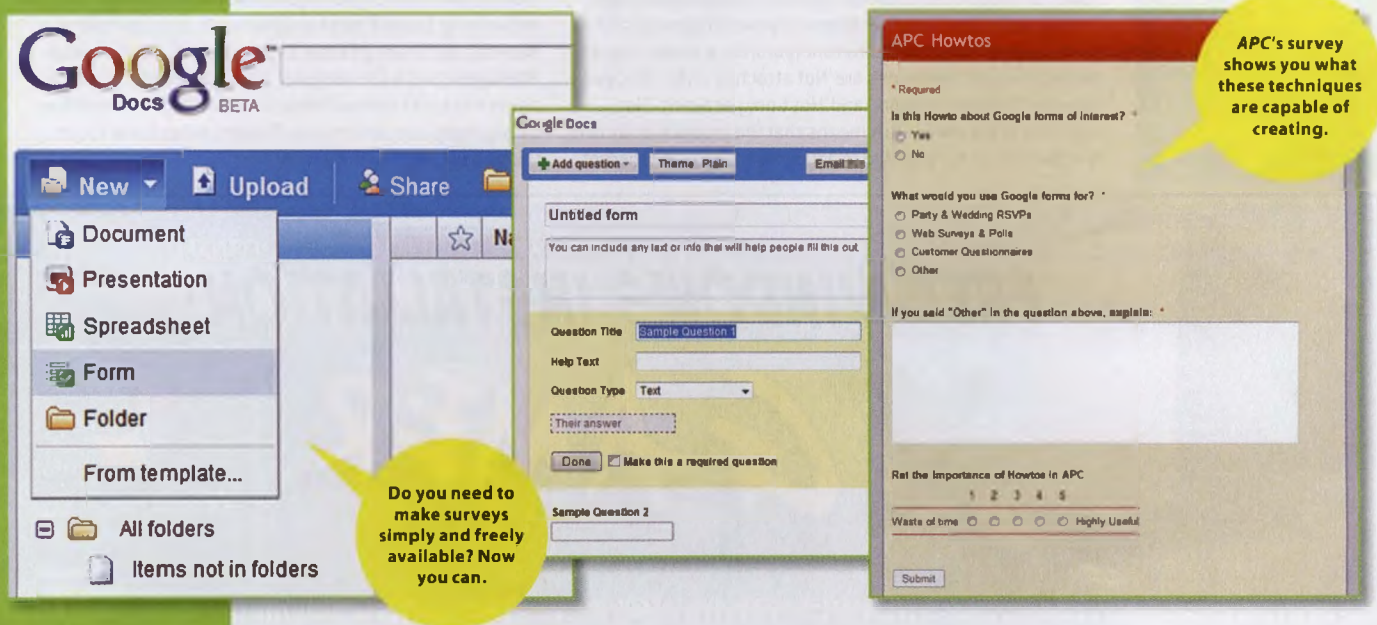
To set up a Google form, you need a Google Account (free, or with Google Apps). Go to the Documents section (if you're in Gmail it's in the menu in the top left of the page), click 'New' and then 'Form'. From here on in it's extremely easy. You get an untitled sample form with one question on it. Add your data, and add more questions. You're pretty much writing a simple database, filling in the field names and data types. If you don't like your creation, you can delete it and start again, but it's worth mapping out the survey or poll before you get started so you're not messing about while actually building the form.

Google's form builder gives you plenty of options for formatting your survey questions. For each you have a choice of multiple choice, checkboxes, a drop-down list, text (short field and paragraph field) and a rating question in which the user rates something on a scale of numbers. When the form is finished, you can dress it up with a theme — from about 70 on offer that range from simple to gaudy but with enough variation to fit on most web site styles.

Once the form is completed, you decide how to get it to your audience. You can email it or embed it on a web page. Sending it via email is simple: press the email button at the top of the form and up pops a Google addressing form. If you want to add your form to your web site, go to 'More Actions > Embed', and you're given a line of code to add to your web page's HTML.

APC is kindly hosting the sample form I've created, at **apcmag.com/sample_google_form.htm**. As you can see, it looks totally professional. The customer who receives the email version of the form can fill it directly from email, or click on a link to a web-based version of that same form.

To view the results, go to 'Documents' in your Google account and just open the spreadsheet created by Google with the form's name. In its rows and columns you'll find the answers to your questions. If you need to work on it in Excel, just export in .xls format.



LINUX

Manage backups in Linux

Managing your backups can be a real hassle — but with AcetoneISO, it doesn't have to be.

APC EXPERT

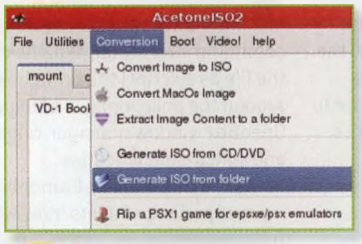
MAYANK SHARMA

Mayank Sharma is a long-time Linux technical author and commentator.

Depending on how often you take them, backup snapshots can quickly get out of hand. At home you can get away with having one backup copy, but at work, laws dictate the time span for which you need to keep a backup copy. You might be surprised to learn that it can be a pretty long period. While your typical corporate backup app will compress backups into transferable images, they cost a bomb and aren't really an option for cost-sensitive setups like schools and non-profit groups. Even small organisations that don't have tons of gigabytes of data floating around in databases can get by using their distro's built-in backup tool. If you can get by like this too, I'd suggest that you use AcetoneISO to mobilise the backups. AcetoneISO can create disk images out of ordinary files and folders. It can also read archives in various formats — including NRG, DAA, BIN, IMG — and convert them into ISO images, which it can then encrypt, compress, and split into smaller chunks. It will also create a database to manage your collection of backup images.

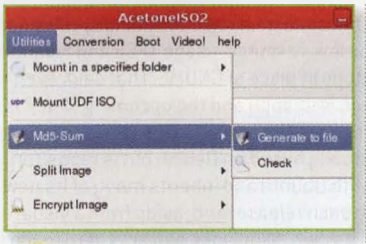
6 STEPS PACK FILES INTO ARCHIVABLE IMAGES

USE ACETONEISO TO CREATE AND ENCRYPT AN IMAGE FROM ORDINARY FILES.



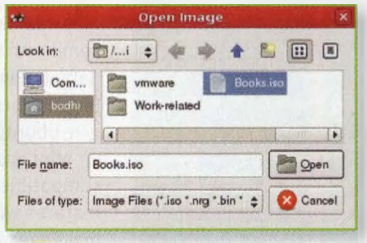
1 SELECT THE BACKUP FOLDER

To generate an ISO image, head over to the Conversion menu, where you have the option to either generate the image from files available locally on your disk or from those found on a CD or DVD.



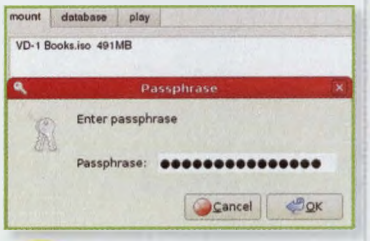
2 GENERATE AN MD5 CHECKSUM

Now that you've got an image, navigate to 'Utilities > MD5-Sum' and get yourself an MD5 checksum for the image. It's a number-crunching process that will take time, but this step is essential.



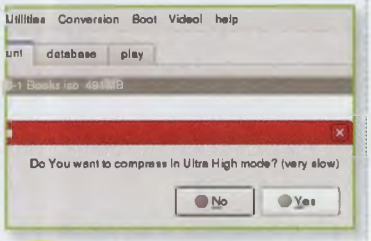
3 MOUNT THE IMAGE

You can check the image file by mounting it using the 'Mount' button on the main interface. This is also useful for working with the contents inside the images without extracting them.



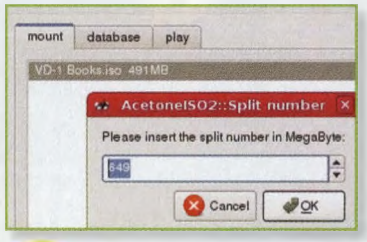
4 ENCRYPT FOR SAFETY

AcetoneISO uses GPG to encrypt the images. When you select an image to encrypt, you'll be asked for a passphrase, which you'll also need to decrypt the image, so choose something strong.



5 COMPRESS WITH 7-ZIP

To save space on your hard drive or backup medium, you can compress your images. AcetoneISO uses the high compression ratio in the 7-Zip format to squeeze the images considerably.



6 CUT THE IMAGE INTO CHUNKS

To transfer your backup image somewhere else, you can use AcetoneISO to cut images into small chunks that are easier to move. When you select an image, you'll be prompted to set a split threshold.

OPEN SOURCE CHALLENGE

The lighter side

With the release of Ubuntu 9.04, it's good to remember that while Ubuntu is the most popular distro, it's not the only one.

APC EXPERT

ASHTON MILLS

Ashton has been using Linux since Slackware came on floppies, and before that he was one of the three people in the world who used OS/2 (and loved it). Always ready to make the most of his PCs, he is constantly playing with Linux distributions and compiling the latest kernel. This is his idea of fun, and why we get him to write for *you*.

We've covered alternative distributions in the past in this column, but they were all mainstream alternatives like Fedora and PCLinuxOS. However, there is a range of lesser-known but equally well-deserving platforms that have earned a perusal. Granted, while it's one of my hobbies to explore what else the Linux ecosystem has to offer, it may not be everyone's cup of latte. However, if you feel like seeing what else other distributions are doing aside from Ubuntu, here's a selection that are well worth your time, and all with lower-end systems in mind.

To explore these you can either install them to a spare partition or — easier — just fire up VirtualBox and boot their LiveCD ISO images directly in a virtual machine.

LINUX MINT

www.linuxmint.com

1 Mint is a distribution that runs well on older hardware, partly because it has two community editions that come with the low-resource-usage XFCE and Fluxbox as the default desktops in place of GNOME. That said, even the GNOME version is snappy and the upcoming Mint 7 is sure to give Ubuntu a run for its money in the look and feel stakes.

Mint is actually based on Debian but is repository-compatible with Ubuntu and inherits many of its new features with each release. And, aside from a visual makeover all its own, Mint looks and acts very much the same — with one important difference: Mint uses its own configuration, software install and update manager software that, on the whole, are clearer and easier to use than those in Ubuntu.

The update manager (MintUpdate) especially is a great tool, classifying all updates in one of five categories from 'Certified' through to 'Dangerous', and colour-coded green through to red to match. These numbers and colours are displayed next to each package in the update manager, allowing you to clearly see what level updates you want to apply or, alternatively, limit the update manager to only show for example levels one to three ('Safe'). Its package manager is also a step above Ubuntu's, looking and acting a bit like Synaptic with a dose of user-friendliness thrown in.

Mint also has a strong community and it's no surprise that, at the time of writing, it's currently ranked more popular than official RedHat spinoff Fedora at **www.distrowatch.com**. Fedora is an excellent distribution, so this is a good sign indeed for Mint.

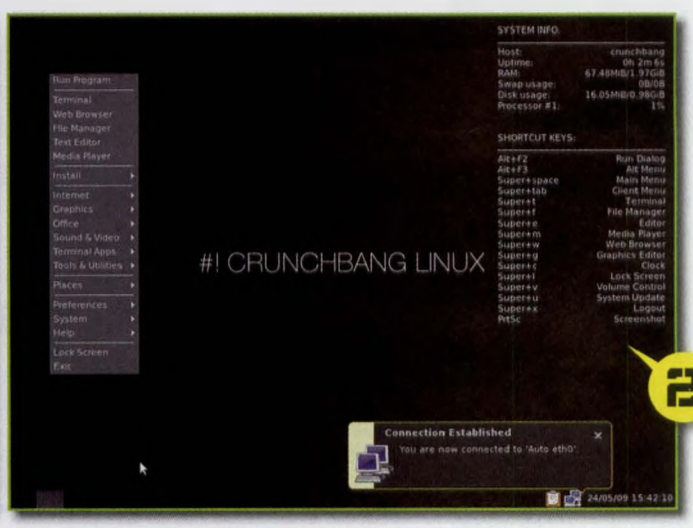
#! CRUNCHBANG

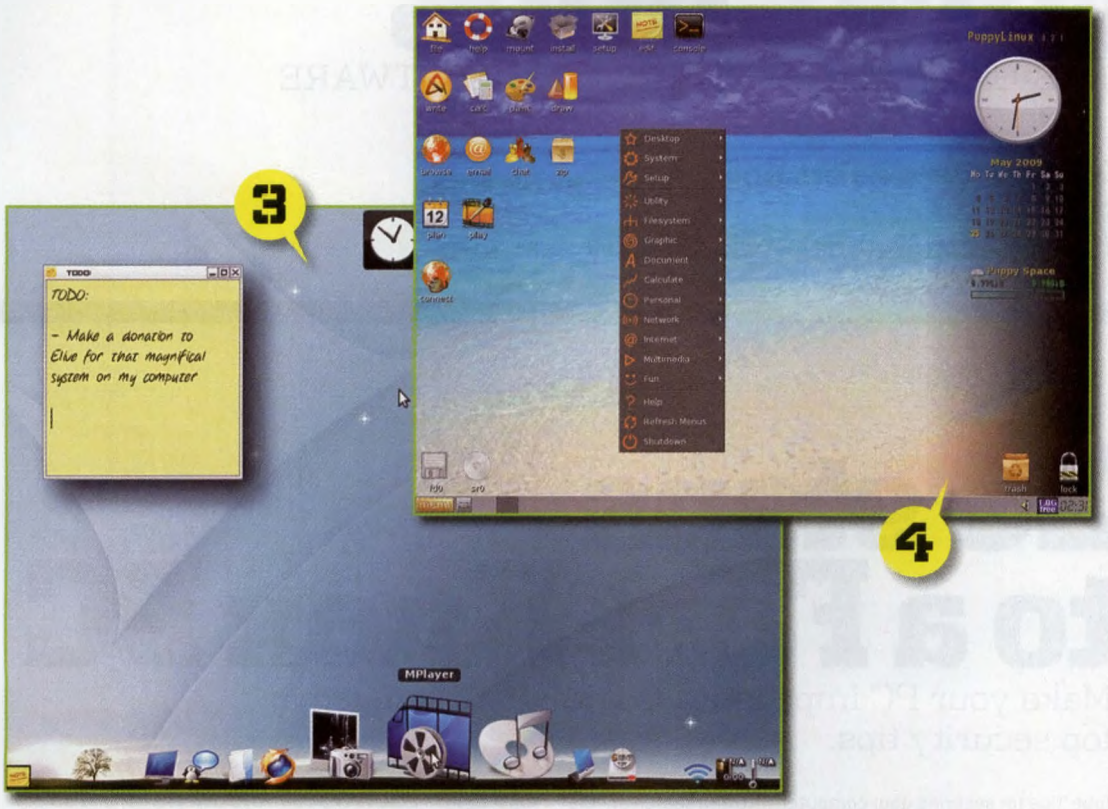
crunchbanglinux.org

2 Not the least impressive for titling a distribution after the Bash escape sequence (#! — which tells the Bash command interpreter, aka. the command line, to interpret the file as a script) the Crunchbang distribution is built around the philosophy of being tight and fast. It uses the OpenBox window manager, originally based on the popular and lightweight Blackbox.

As the title implies, Crunchbang is somewhat targeted at more experienced users; however, it's so well put together that anyone can get started using it. And, because of its OpenBox base, it has extremely low resource requirements and so will run well on older or less well-endowed systems.

Despite its seemingly hackerish nature, Crunchbang is actually based on Ubuntu, and, as its home page states, is developed around a minimal install for a good balance of speed and functionality. Based on Ubuntu as it is, all the





familiar applications are there from Firefox and Pidgin through to The GIMP and Deluge. However, one element that sets it apart is its use of the Conky system monitor, put to excellent use as part of the desktop background showing essential system stats as well as a handy short-cut tree.

If you're looking for a fast and lightweight distribution and haven't used interfaces like OpenBox before, give it a go and explore a little of what the other side uses.

ELIVE

www.elivecd.org

3 Elive is based around the Enlightenment window manager, originally developed by Australia's own Carsten Haitzler. Enlightenment puts visual aesthetics first before functionality and, for a while many years ago, this made it a very pretty but not necessarily practical interface. Today it's come a long a way and its looks belie its power — capable of sporting snazzy 3D effects like transparency but *without* the need for a beefy 3D card installed, Enlightenment is now finding a new home on portable devices that want a good-looking interface but don't pack hardware grunt to display them. It even comes with its own physics library, a demo of which you can find in Elive's distribution under the Demos menu — and is impressive to say the least.

What this means for a desktop distribution is that, like OpenBox and XFCE, Enlightenment is very resource-friendly and can run fast on lower-end systems while flooring them all for visual snazz and effects.

Elive comes by default with a range of features including a animated task bar similar to the dock in Mac OS X, and many of the same applications you'll find under Ubuntu, although Elive itself is based around Debian. For a quick video tour, see the home page.

It may not suit everyone's tastes, but as far as lightweight distributions go, it's definitely one of the prettiest. Note that the developer for Elive asks for a donation in order to download the Stable release; however he offers the Development release free.

PUPPY LINUX

www.puppylinux.org

4 You can hardly go wrong with a name like Puppy Linux, but it's just as well that it performs as well. Puppy is an Australian distribution originally started by Barry Kauler, and aimed to be a tiny, fast, feature-filled version of Linux.

And it largely meets those aims — designed to run on low-memory systems or entirely from a USB key, Puppy is very lightweight indeed. Intelligent loading allows it to run entirely from system memory (meaning you can remove the boot disk) and even the Live CD weighs in at no more than 100MB — yet it seemingly comes with more applications installed out of the box than Ubuntu!

It also comes with a number of unique features, including its own package management system (PetGet) and the ability to create 'Puplets', or Puppy-based derivatives. There's even one, called Simplicity, designed for netbooks. A tool, known as Remaster Express, comes with Puppy to make it easy to tailor the distribution to your needs and release your own version.

While it's not the prettiest distribution around and uses a range of very light sometimes less feature-rich apps, all the essentials are there and it will likely bring back to life an old machine that Windows would turn its nose up at. Of all the lightweight distributions covered here Puppy is the lightest by far, and well worth checking out.

DO THIS... THE KDE ALTERNATIVE

While not lightweight, KDE is the capable alternative to GNOME and currently the underdog in the Linux graphical desktop world. Ever since making the leap to KDE 4.0 which drastically changed the look and feel of KDE, KDE has fallen somewhat in the popularity stakes. However, as a desktop it's just as viable as ever and some of the Linux platform's most popular apps are still based on the KDE/QT platform (like Amarok and even VirtualBox). Two distributions that really showcase KDE are Kubuntu, the KDE version of Ubuntu, and OpenSUSE. Kubuntu (*www.kubuntu.org*) is, as the name implies, repository-compatible with Ubuntu and is officially supported by Canonical. While some of its desktop paradigms take a leaf out of Mac OS X more than GNOME, it's rapidly shaping up to be visually superior both in looks and functionality. Once this new version of KDE matures a little more, GNOME could well have a hard time being the default desktop for a number of distributions, although for consistency Ubuntu is likely to stay with GNOME for a very long time. Hence, if you try out KDE and like the look and feel you can get the best of Ubuntu and the best of KDE with Kubuntu. OpenSUSE (*www.opensuse.org*) has long been a KDE distribution and is built from the commercially orientated SUSE, developed by Novell. SUSE is well known for its excellent configuration and application installing program YaST (Yet another Setup Tool) and its polished interface, being one of the first distributions to completely customise and theme its KDE and GNOME interfaces for a consistent experience. The SUSE implementation of KDE is very well done and a good introduction if you're looking to give KDE a try.

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103 Professional network security scanning

SECURITY

20 steps to a Fort Knox PC

Make your PC impenetrable with **Jon Thompson's** top security tips.

WHAT YOU'LL NEED

A PC
If you think your PC could be more secure, chances are you're right. We'll show you how.

AN EYE FOR DETAIL
You'll need to keep your eyes open. There's a lot of ways you can expose your computer, so if something looks dodgy, research it on the net before accepting or allowing it.

Type 'tips for securing your computer' into any search engine and it's surprising how many times some curiously similar basic advice crops up. They're almost always the same tips, in the same order, looking as if they've been cut and pasted from site to site. But you already know how to enable your firewall, that you must install antivirus software before venturing online and that you need to enable automatic Windows updates. So what can you usefully do beyond this to help secure your network? We've compiled a list of 20 tips designed to give you a more secure computing environment.

1 ADD A PASSWORD

Enabling passwords is possibly the single most important thing you can do if your computer is used by several people. More to the point, if your computer is stolen, being able to boot Windows and log in without a password is like leaving your front door unlocked.

To add a password, go to the Control Panel and double-click 'User Accounts'. Click on the administrator account, then 'Create a password'. Enter and confirm your password, and also enter a password reminder phrase. Make this as cryptic as you can, because anyone can see it.

2 BANISH THE DEFAULTS

Almost all wireless routers require an administrator password before a user can log into the device and modify the configuration settings. However, the default password is weak because lists of such passwords are available on the internet. We recommend that you change the default password. It may not be an account that you log into very often, so try to make it a memorable password. See the 'Make strong passwords' box on page 98 for help with this.

3 LOCK GUEST ACCOUNTS

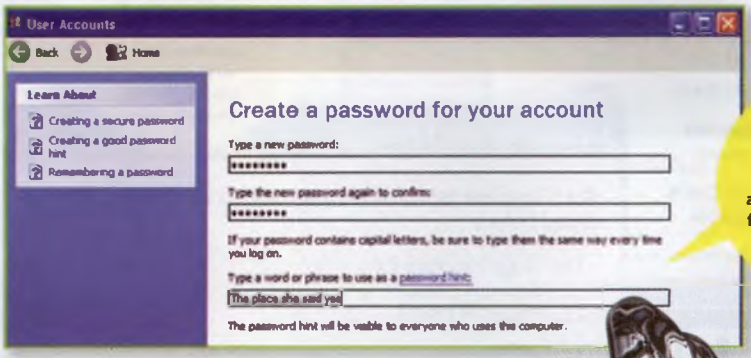
Some people like to give access to the Windows 'Guest' account when others need temporary unsupervised use of their computer. However, when you enable this account, it has no password by default. If you decide to make use of it (after all, it's not inherently less secure than other non-privileged accounts), make sure that you give it a password. If you're not using it, disable the account completely in the Control Panel.

4 PLUG OPEN PORTS

Open ports on your firewalls are vulnerable to attack in ways your antivirus software won't necessarily detect. To close them, double-click 'Windows Firewall' in the Control Panel. On the Exceptions tab of the pop-up window, untick the services you no longer use. If you know you won't be using a service again, select it and click 'Delete' to remove the exception for good.

5 FORCE THE ISSUE

You can easily force users to have passwords in Windows. On the Start menu, right-click on 'My Computer' and select 'Manage'. This brings up the Windows Management Console. Expand 'Local Users and Groups' and select the Users folder. Right-click the account you want to change and select 'Properties'. A box will pop up giving a number of tickboxes for controlling the account's password. Untick 'Password never expires' and tick 'User must change password at next logon'. This will force the user to change their password (thereby setting it) the next time that they use the machine.


User Accounts
Back
Home
Learn About
Creating a secure password
Creating a good password
Remembering a password
Create a password for your account
Type a new password:
Type the new password again to confirm:
If your password contains capital letters, be sure to type them the same way every time you log on.
Type a word or phrase to use as a password hint.
The place she said yes!
The password hint will be visible to everyone who uses this computer.

TIP 1:
It sounds obvious, but setting up a password for your account is essential for protecting your data from friend and foe alike.

Missed a tutorial?
Visit www.magshop.com.au for back issues of APC

6 SHUN AUTO COMPLETE

If you share your computer with others, it's a very good idea not to store account credentials for web sites in your web browser. The details may be stored securely, but if your browser automatically fills in your log-in details every time you visit a site, all the encryption in the world won't stop another user from logging in as you.

In Internet Explorer, click on the Tools menu and select 'Internet Options'. On the Content tab of the subsequent window, click the 'Settings' button in the Auto Complete section and a smaller window will pop up. Here, you can set options to stop the browser from using auto complete for sensitive items. Back on the General tab, press 'Delete' and select the data types that you wish to delete.

In Firefox, select 'Options' from the Tools drop-down menu, select the Privacy tab and unclick 'Remember what I enter in forms and the search bar'. Next, click the 'Settings' button. The subsequent window will allow you to specify what you want to delete.

7 USE WMA ENCRYPTION

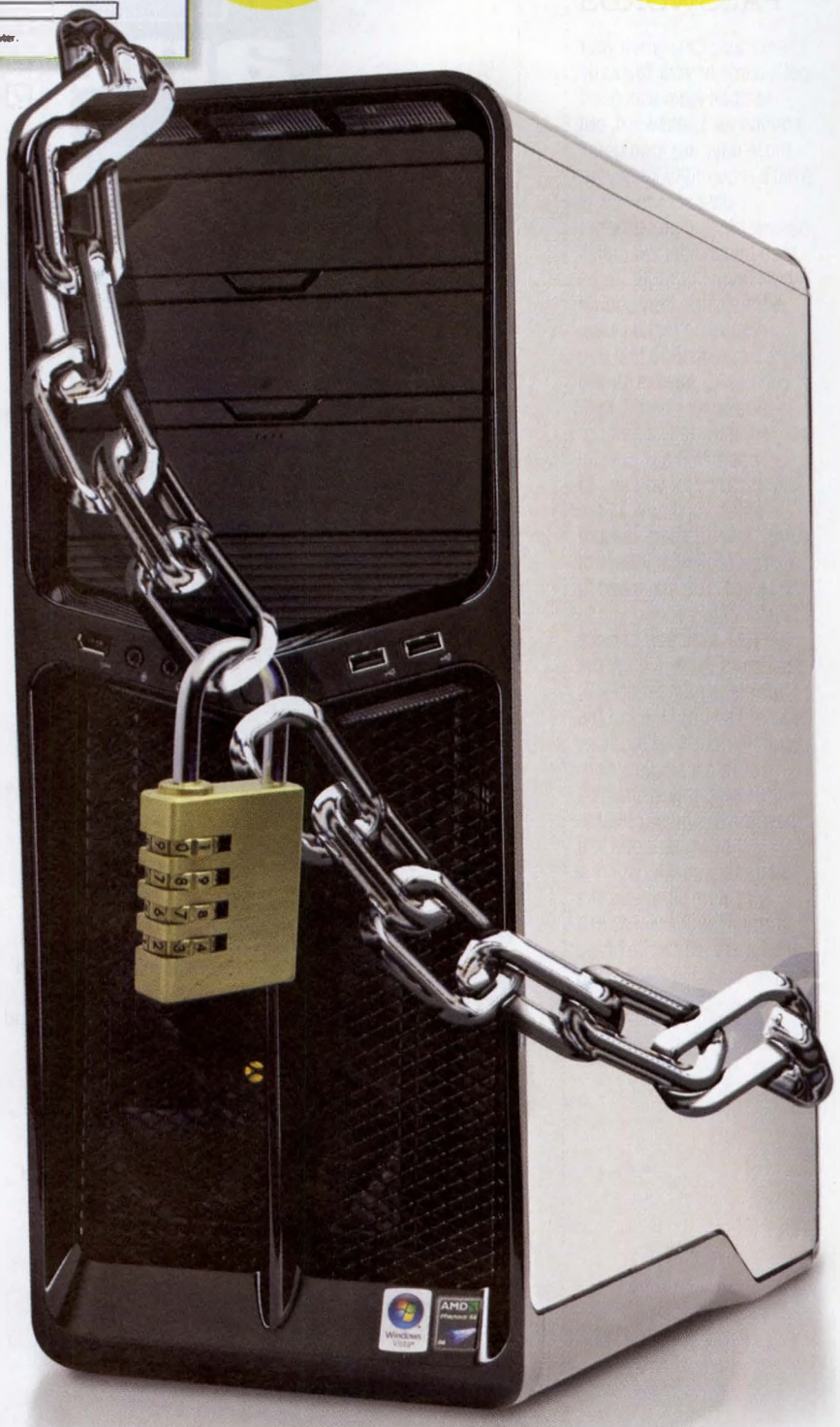
If you have an unsecured Wi-Fi network, who knows what the neighbours might be up to? However, standard WEP encryption is no longer considered secure as plenty of tools now exist to crack it. Instead, you should be using WMA to secure your network. You'll have to read your equipment manuals to find out how to enable it, but once it's enabled, cheapskate neighbours will finally have to buy their own broadband connection.

8 LEARN TO SPOT SPAM

You may be savvy enough not to fall for email phishing scams, but how clued-up are the others who use your computer? It only takes one malicious attachment to be opened and all your good security practices will have been for nothing. Make sure that everyone understands this and train them to delete all spam unopened.

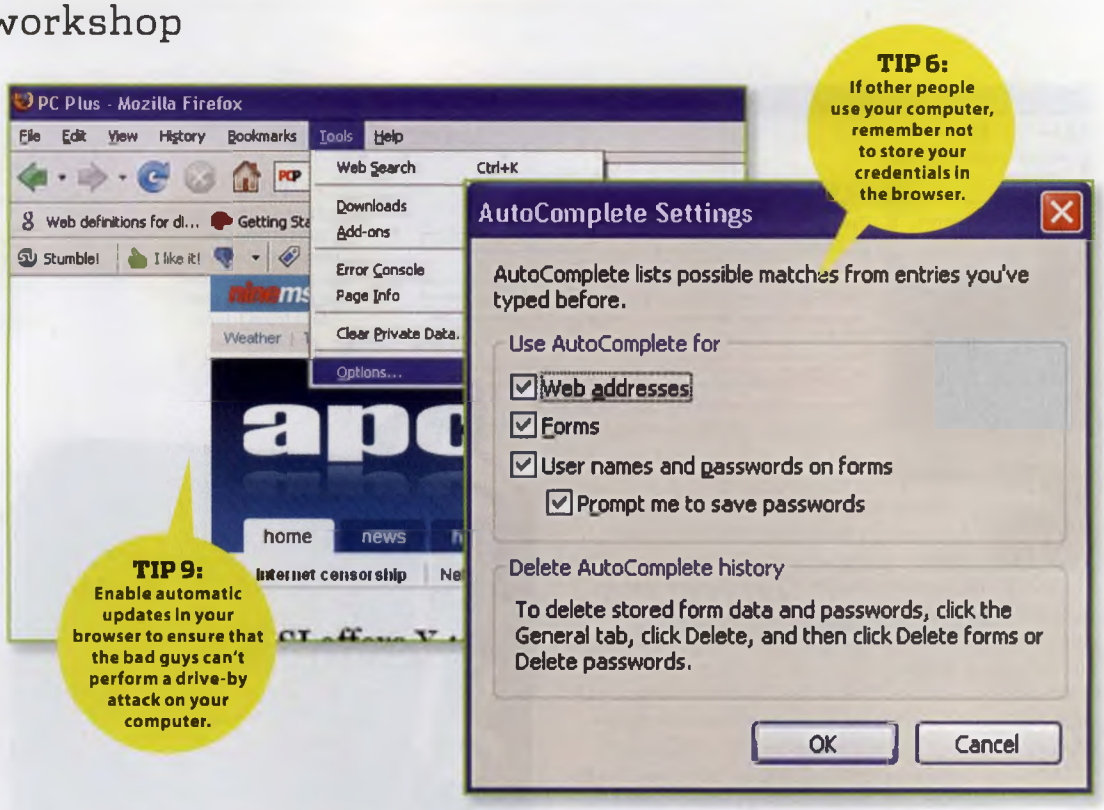
9 STAY UP-TO-DATE

So-called 'drive-by' attacks on web browsers are incredibly common and becoming more so. Some exploits work via unpatched vulnerabilities in your web browser, so to avoid this scan regularly for security patches. Internet Explorer is updated automatically by the Windows Update service. In Firefox, simply click 'Scan for updates' on the Help menu.



DO THIS...
MAKE STRONG PASSWORDS

There was a time when your pet's name or your favourite football team was good enough as a password, but those days are long gone. What's required to keep your data secure now is passwords that are stronger than these older examples but still memorable. To be extra secure, they should require no recall clues. Here's one method that you can use to create a strong password that's up to scratch. Take a song or poem that has special significance for you and to which you know all the words. Take the first line and extract the initial letters of each word. You may need to include the second line to get to a minimum of eight characters. Now change the vowels to numbers (A=4, E=3, and so on), and put the resulting nonsense together into a single string. Using this string as a password is guaranteed to be impervious to a dictionary attack (where a program simply works through all the words in a dictionary file) while being simple for you to remember.


PC Plus - Mozilla Firefox
File Edit View History Bookmarks Tools Help
Web Search Ctrl+K
Downloads
Add-ons
Error Console
Page Info
Clear Private Data...
Options...
home
news
Internet censorship
AutoComplete Settings
AutoComplete lists possible matches from entries you've typed before.
Use AutoComplete for
Web addresses
Forms
User names and passwords on forms
Prompt me to save passwords
Delete AutoComplete history
To delete stored form data and passwords, click the General tab, click Delete, and then click Delete forms or Delete passwords.
OK
Cancel
TIP 6: If other people use your computer, remember not to store your credentials in the browser.
TIP 9: Enable automatic updates in your browser to ensure that the bad guys can't perform a drive-by attack on your computer.

10 GET A BETTER FIREWALL

The firewall supplied with XP does not block outgoing connections (the firewall supplied with Vista does), so if you become infected with malware that sends spam or launches denial of service attacks, the firewall won't stop it. It's a good idea, therefore, to install a third-party firewall with more features, such as Zone Alarm.

11 GO INVISIBLE

Most Wi-Fi routers continually broadcast the network's name using a feature called the Service Set ID, or SSID for short. This may make setting up wireless clients extremely easy, but it also makes wireless LANs visible to any Wi-Fi devices within range. Turn off SSID broadcasting to make your wireless LAN invisible to all but you.

12 TURN OFF HTML

It might be pretty, but you really should turn off HTML mail in your email client. In the bad old days, it was easy to spread malware via email because programs such as Microsoft's Outlook Express had HTML switched on and ran any embedded JavaScript.

Times have changed, but spammers haven't. They're still very interested in knowing if your address is active, and all they need to gain that knowledge is for you to read an HTML email. This is because HTML allows for the inclusion of remotely stored images.

When accessed from the spammer's server by rendering an HTML email, he instantly knows that you've read his message and your address is active. He can then either spam you again or, as is more likely, sell your address along with millions of others to other fraudsters.

13 GO TO THE SOURCE

Only install demo versions of software downloaded directly from the manufacturer's site, or from a trusted third-party site such as **www.download.com**. It's easy to infect software with malware and offer it for free download from a site with a similar URL to the original company. For the same reason, beware of strangers offering to give you free copies of demo software.

14 USE MAC FILTERING

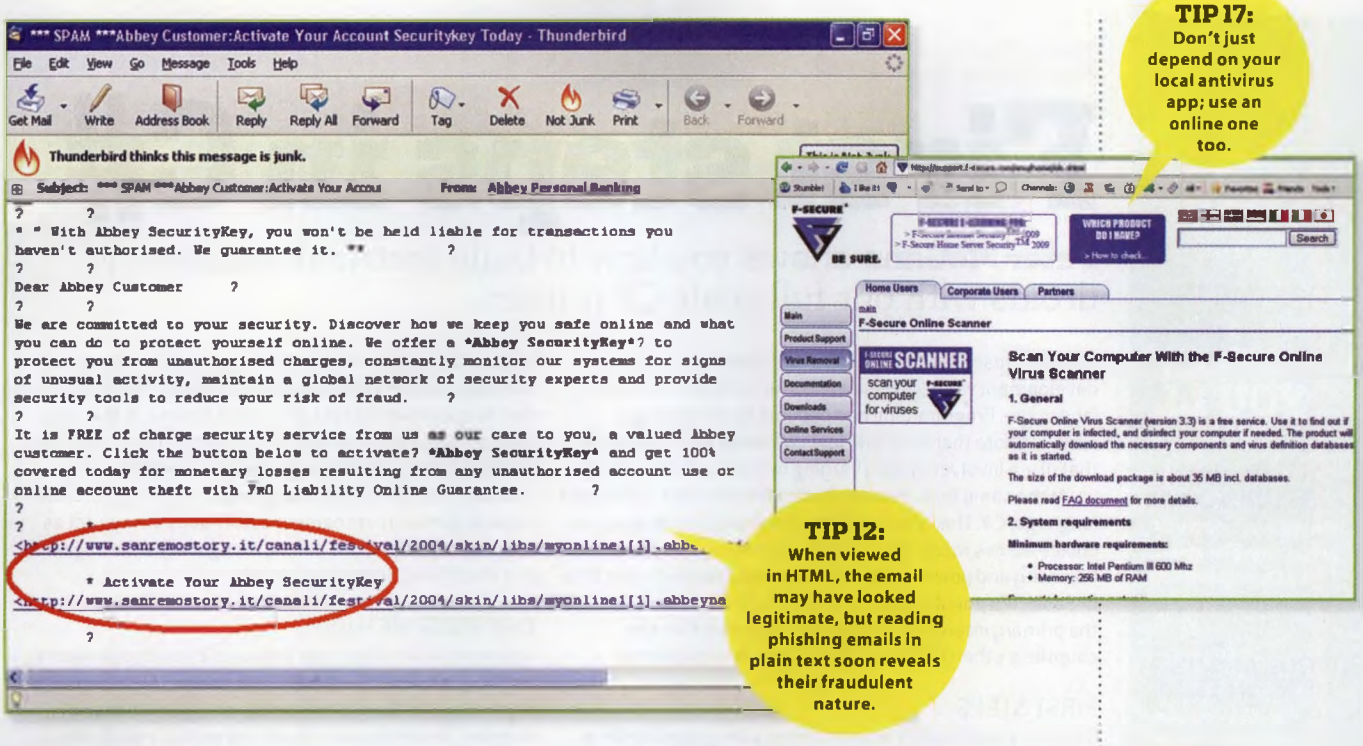
If your wireless router supports it, use MAC filtering. This is a method of rejecting all traffic other than just that which is definitely coming from your own network cards. The IP addresses assigned when each machine boots up over DHCP are handed out on demand, but the MAC address of each network card is fixed. A determined hacker can spoof the MAC address of a network card to try to gain access to your network, but when used in combination with WMA encryption this will be enough to put off all but the most determined of hackers.

15 GO TO SITES DIRECTLY

Internet auction fraud is on the rise. One technique that's becoming increasingly popular is for a fraudster to ask you questions about the goods on offer and then claim to be ready to send a payment.

He then crafts a fake email that's designed to look as if it came from your auction site explaining that the transaction has been cancelled due to a problem with your account. If you click the log-in link in the email, however, you're sent to a murky phishing site to have your username and password taken.

People with 100 per cent reputations and thousands of


*** SPAM ***Abbey Customer:Activate Your Account Securitykey Today - Thunderbird
File Edit View Go Message Tools Help
Get Mail Write Address Book Reply Reply All Forward Tag Delete Not Junk Print Back Forward
Thunderbird thinks this message is junk.
Subject: *** SPAM ***Abbey Customer:Activate Your Accou From: Abbey Personal Banking
With Abbey SecurityKey, you won't be held liable for transactions you haven't authorised. We guarantee it. **
Dear Abbey Customer
We are committed to your security. Discover how we keep you safe online and what you can do to protect yourself online. We offer a *Abbey SecurityKey* to protect you from unauthorised charges, constantly monitor our systems for signs of unusual activity, maintain a global network of security experts and provide security tools to reduce your risk of fraud.
It is FREE of charge security service from us as our care to you, a valued Abbey customer. Click the button below to activate? *Abbey SecurityKey* and get 100% covered today for monetary losses resulting from any unauthorised account use or online account theft with ZERO Liability Online Guarantee.
* Activate Your Abbey SecurityKey
F-SECURE
BE SURE.
Home Users
Corporate Users
Partners
F-Secure Online Scanner
SCANNER
scan your computer for viruses
Scan Your Computer With the F-Secure Online Virus Scanner
1. General
2. System requirements
Minimum hardware requirements:
Processor: Intel Pentium III 600 Mhz
Memory: 256 MB of RAM

TIP 17: Don't just depend on your local antivirus app; use an online one too.

TIP 12: When viewed in HTML, the email may have looked legitimate, but reading phishing emails in plain text soon reveals their fraudulent nature.

sales are being completely locked out of their accounts in this way while the malicious fraudster sells nonexistent goods and keeps the unsuspecting victims' money.

This is a very good reason to always go to the auction site directly to log in, and never to click a supposed log-in link in an email for the sake of convenience.

It's also another good reason for following the advice offered in tip 12 about turning off HTML and reading your email in plain text. Any fake URLs that would normally hide behind graphical buttons are easily spotted using this method.

16 SET A BIOS PASSWORD

If you own a laptop, don't overlook setting up a BIOS password. The process varies from machine to machine, but the most common way to access low-level configuration settings is by pressing either F2 or Delete. From there, navigate to the security section and select to set a password; the exact wording for the option to do this will vary from BIOS to BIOS. Don't forget to choose a secure password, either; see the box to the left for tips on how to do this.

17 DO AN ONLINE SCAN

Every now and then, scan your computer using an online antivirus scanner. The app installed on your PC may be the best, but a second opinion is always a good idea. One such online scanner is provided by F-Secure (**www.tinyurl.com/4rfmo**). Make sure you access it using Internet Explorer rather than Firefox or other non-Microsoft browsers.

18 PROCESS EXPLORER

Install Process Explorer and use it instead of the default Windows Task Manager. Written by Mark Russinovich, Process Explorer is available free of charge from Microsoft (**www.tinyurl.com/ys2zq2**). It provides far more information about a running Windows system than Task Manager was ever designed to give you, so it makes the perfect replacement.

To use Process Explorer, install it, run it and select 'Replace Task Manager' from the Options menu. Whenever you subsequently press Ctrl+Alt+Delete, Process Explorer will pop up instead of Task Manager.

If you spot a process you don't recognise, double-click on it to bring up its details. The subsequent window has several tabs. Click on Image and press the 'Verify' button. This verifies the suspect program's signature: with the developer's web site if necessary.

Another useful tab is TCP/IP. This shows any connections the program has established to external servers. If you happen to find a program that won't verify and has external connections, you may have an infestation.

19 REDUCE WI-FI RANGE

If your Wi-Fi router and network cards support it, turn down the transmission power to reduce the range of the network signal. It's difficult to contain your Wi-Fi signals to within just your home or office, but you can certainly go some way to reducing the range over which people can detect it.

20 INSTALL AN IDS

Finally, don't throw out that old server. Install Linux on it and install an intrusion detection system (IDS). A good one to try is the Tripwire IDS (**www.tripwire.com**) under Linux. Such a system can help give you an early warning that your network is being probed prior to a full-scale attack.

FACT...

Unprotected computers on the internet are certain to be compromised within hours, if not minutes. Security researchers use 'honeypot' software that mimics an unprotected computer to study how this happens. The software responds exactly as an unprotected PC should, but it records everything for later analysis.

DEVELOPMENT

First steps in C#

Peter McGann shows you how to build instruction-following droids with our full-scale C# primer.

WHAT YOU'LL NEED

VISUAL STUDIO 2008
This app supports the C# programming language, and Express editions are free.

SOME PROGRAMMING KNOWLEDGE
Ideally you should have some knowledge of object-oriented programming. If you do, you'll find it easier to get started.

When Microsoft unleashed the .NET framework on the development world, it was a welcome update to the coding landscape. Programming had become an increasingly tedious chore thanks to low-level Windows API commands that often involved widely varying methods of interaction.

At the same time, Microsoft introduced us to a brand-new language, C#. This is increasingly becoming the language of choice across many frameworks, combining as it does the flexibility and power of C++ with the rapid development time of Basic. It's popular, too: both Silverlight and XNA use C# as the primary interaction language, not to mention the countless other .NET apps using C# as their backbone.

FIRST STEPS

The best place to start when learning a language like C# is to produce a text-based application to be run in the Console. This will leave you free of the clutter and overheads of designing a Windows program while still providing a basic user interface.

A Console application is essentially an I/O interface (like a DOS command prompt window), providing basic input and output functionality. You can create a new console application by choosing the appropriate project template in Visual Studio.

Go to 'New Project > Visual C# > Windows > Console Application', create a new Console application and call it 'Droids', placing it in a suitable folder on your PC. You'll notice that a single class called 'Program.cs' is created within your project. This is where the entry point of your application sits when you execute it. If you open the class code module by double-clicking, you'll see several elements. You need to at least partially understand what these are before moving on.

First, look at the namespace keyword. It currently defines Droids (the name of our app) as the namespace. Namespaces are generally used to abstract libraries of code that may contain classes of the same name. In this way they provide a context for the code within them. You'll also notice the braces '{}' acting as a scope for whatever is contained within. In our arrangement, the Program class sits within the Droids namespace. Braces always act as scoping delimiters, and can be thought of as the beginning and end of a module or code block.

OUR FIRST METHOD

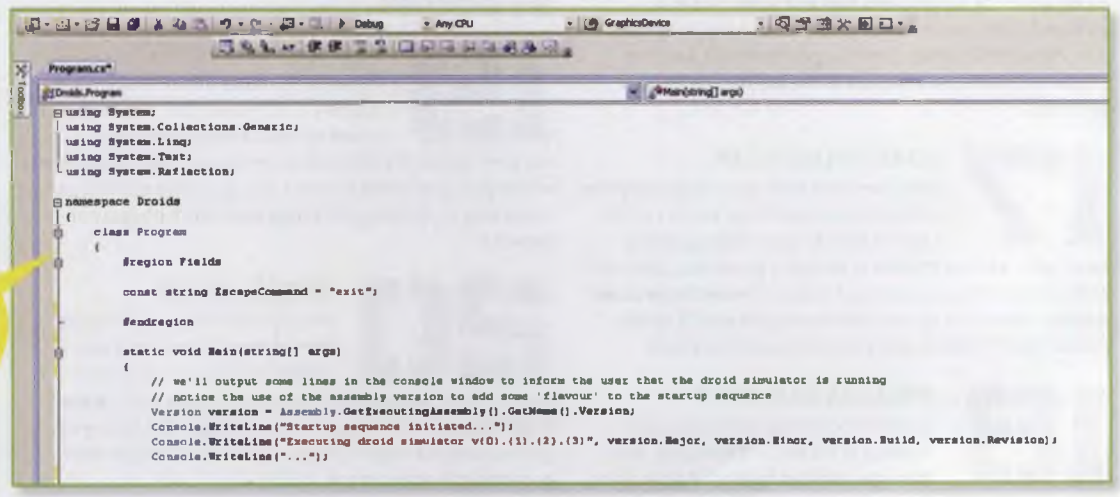
A method is like a function: a block of code that performs a specific task. Within the Program class, there is a single method called 'Main()'. This is the entry point for any program, so when you compile and run your application, any unconditional code here will be executed.

Let's dissect the syntax for the Main() method, as it contains a few interesting attributes:

```
static void Main(string[ ] args)
{
}
```

The 'static' keyword denotes that the method doesn't require an object reference to be accessible. The operating system has no prior knowledge of what's in your code, but it does expect to be able to call Main() to start your application. Every program needs a Main() method, so its name should never be changed. If it is, the program will fail to compile.

The 'void' keyword means that this method has no return value: it simply executes code and then exits the application. If you want to provide a continuous user



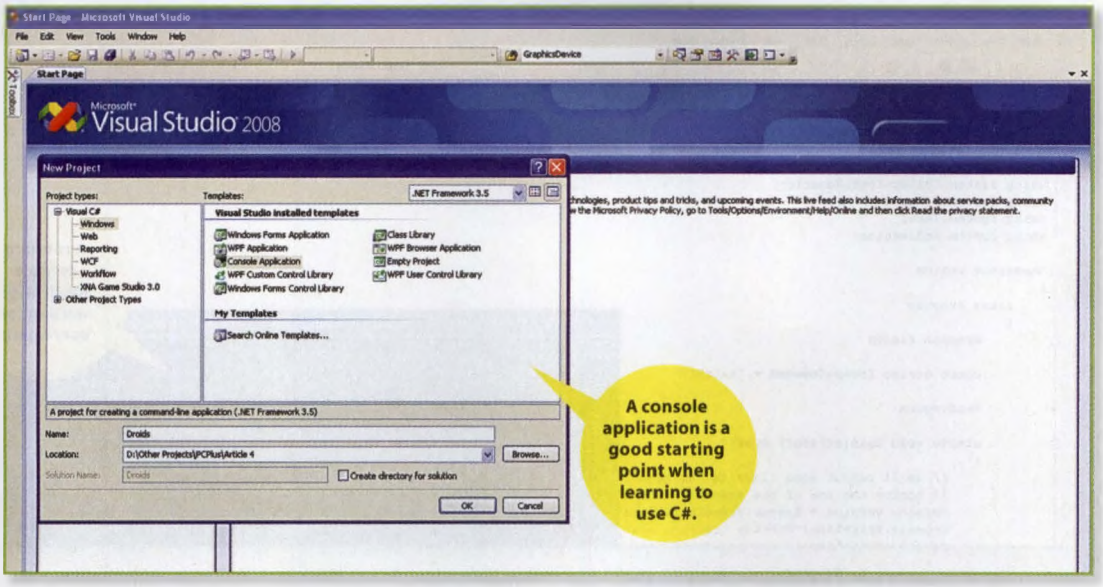

```
using System;
using System.Collections.Generic;
using System.Linq;
using System.Text;
using System.Reflection;

namespace Droids
{
    class Program
    {
        #region Fields

        const string EscapeCommand = "exit";

        #endregion

        static void Main(string[] args)
        {
            // we'll output some lines in the console window to inform the user that the droid simulator is running
            // notice the use of the assembly version to add some 'flavour' to the startup sequence
            Version version = Assembly.GetExecutingAssembly().GetName().Version;
            Console.WriteLine("Startup sequence initiated...");
            Console.WriteLine("Executing droid simulator v{0}.{1}.{2}.{3}", version.Major, version.Minor, version.Build, version.Revision);
            Console.WriteLine("...");
```



experience, you'll need some kind of iterative loop, otherwise your code will just run through once.

The parentheses '()' denote the area for parameter definitions. In this case, we've specified a variable-length array called 'args'. The variable length is denoted by the '[]' syntax (empty brackets always signal an unknown length).

The args array is a linear sequence of strings that can be accessed using an indexer. In simple terms, this means that args[0] designates the first string in the array, args[1] the second and so on. The args string is passed to the Main() method when your application starts. Essentially, any command-line arguments you choose to apply will be fed directly in. This means that we can instruct it to run in a particular manner or to process a particular file. To see it in action, take the following command:

```
D:\Droids\bin\Debug\Droids.exe "ProcessFile.txt"
```

Running the above command would cause our Droids app to fire up, with the contents of 'Process File.txt' fed in as the first string stored in the args array.

CLASSES AND OBJECTS

At its most fundamental level, a class or object consists of a public interface and a private implementation. Fields, properties and methods can be either public or private, depending on their function within the object. Whichever type you end up using, you'll need to implement an access modifier to inform the compiler of your method's accessibility.

The available modifiers are as follows: 'public' (visible to all modules that have access to the declaration module), 'private' (visible only to the declaration module), 'protected' (visible to the declaration module and any classes inheriting from it) and 'internal' (visible to all modules within the declaration assembly). If no modifier is explicitly declared, it's declared private by default.

C# makes use of all the common data types you'd expect in a sophisticated language, such as integers, strings, Boolean results and so on. Like its C ancestors, a C# variable can be declared and assigned in the same code line using the following syntax:

```
int m_MyInt = 12;
```

Properties are a way of allowing access to the variables within a class while guarding against your software crashing if it's fed spurious or incompatible values. In more technical terms, properties provide accessibility restrictions and validation control.

A simple example of this is below:

```
public int MyInt
{
get { return m_MyInt; }
set { m_MyInt = value; }
}
```

Notice the use of the 'value' keyword in the 'set' accessor. This represents the value assigned to the property and can be validated for range or applicability.

Methods always perform a function, and can either return a value of a specific type or nothing ('void'). Obviously, most classes would be useless without at least one public accessible method, but there are many occasions where implementation code can be broken down into private methods. These are so named because they are called only from within the class itself.

Any method can specify required parameters within parentheses using the 'type/name' syntax. This is done in the same way as we declared the arguments for our Main() method:

```
public void OutputMessage(string message)
{
Console.WriteLine(message);
}
```

This declares a public method called 'OutputMessage()' that takes a single string (called 'message') as a parameter and then writes it to the screen.

DERIVED FUNCTIONALITY

Any class you create ultimately derives from the 'System.

MORE ABOUT... THE PRINCIPLES

Encapsulation means that the program should be broken into discrete units of operation, each with a public interface and a private implementation. The interface is the means of outside interaction with the unit, while the world beyond needs no knowledge of and should not interfere with the implementation details.

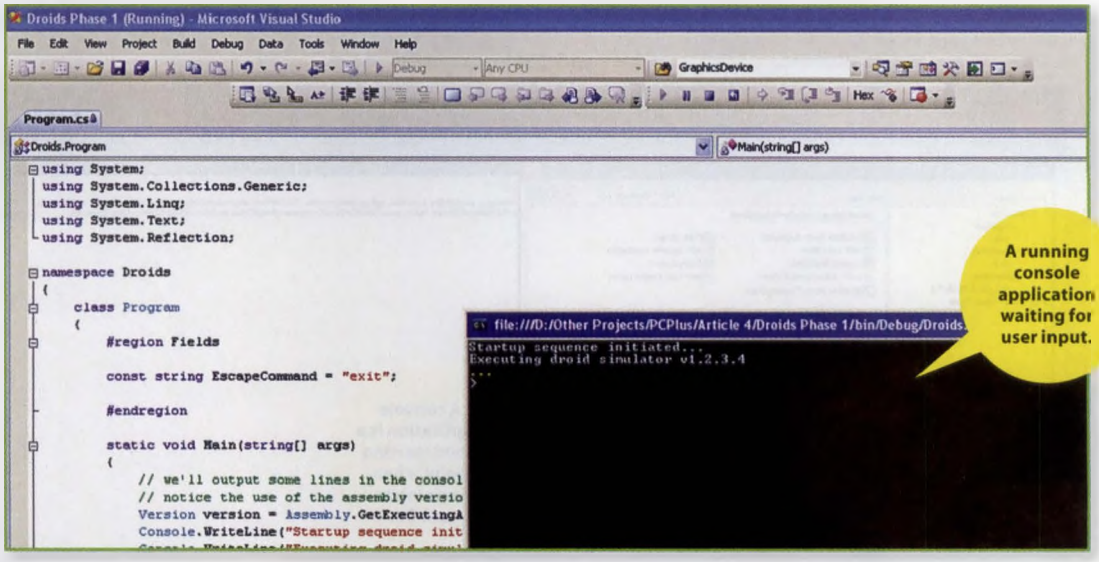
Imagine a cleaning robot. You don't need to understand or manipulate the inner workings of it to get the floor vacuumed; you simply interface with it in some way and issue a basic instruction to start it cleaning. In the same way, a class called 'CleaningRobot' may have a method 'StartCleaning()', the implementation details of which are hidden from view.

Inheritance is the principle of inherited commonality in an object hierarchy. You could create a class of type Droid as the base class. This class would contain common properties such as weight and dimensions, and classes of type ProtocolDroid and AstromechDroid containing properties particular to their implementation. These 'inherit' the common properties from the Droid base class.

Polymorphism (meaning many forms) allows objects in an inheritance chain to be considered as their base type. Say you want to store a collection of droids in an array, but you have many subclassed types and possibly even variants of those subclasses, all of which need to be added to the list. Because of the principle of polymorphism you can create an array of type Droid and add any of the sub-types (AstromechDroid, for example) to it. This is because all types inheriting from the Droid base class can ultimately be considered a Droid.

MORE ABOUT... MANAGED CODE

In a low-level language like C++, the developer must manage any memory they allocate for objects. This means keeping track of all object references and removing allocated memory when no longer in use. If you don't, unreferenced memory can become orphaned in the system, resulting in memory leaks. C# avoids this problem by using a special feature known as the Garbage Collector, which works like this. All reference types in C# are allocated space on the managed heap. This is scanned periodically by the Garbage Collector, and any unreferenced areas of object memory are set for disposal. This act is carried out in a process called 'finalisation'. The process frees you from tracking and managing memory allocation and disposal, a task that can be especially tedious when hunting down memory leaks. However, it does come with a cost: the overhead of the Garbage Collector scanning the heap and disposing of objects. There are two ways to reduce this. First, make your heap simple by avoiding complex hierarchies, cross-referencing or creating a minimal number of objects. Second, avoid instancing any objects at runtime so that the Garbage Collector never even has to run. Any unmanaged references will still have to be disposed of manually as they're not allocated to the managed heap.



Object' class (System is the namespace and Object is the class). Thanks to the wonders of inheritance, all instances of any class will have access to System.Object's common methods. You can make a new instance of any predefined class and pass its methods and functions down the line. Think of a class as a template that gives a context to any object we create from it. Of course, to access members of a class you first need to instantiate (create an instance of) a class in the first place. This is done with the keyword 'new':

```
MyClass instance = new MyClass();
```

Breaking down the syntax, we can see that C# first requires the type of class, then the instance name and then a call to the associated constructor. We've used the 'new' keyword here to ensure that the compiler knows that we're creating a new instance. An empty constructor is inherent in all classes, because they are derived from System. Object. To access the methods and properties associated with an object, C# uses the 'dot' syntax:

```
string myString = instance.ToString();
```

Here, we've assigned the return value of the 'ToString()' method in 'MyClass()' to a string called 'myString'. This is essentially a separate copy of the System.Object base class, thanks to inheritance. You should also notice the semicolon that pops up at the end of all code lines. This represents the termination of a command, and means that a single block of code can stretch over many lines and still not confuse the compiler. If you examine the resulting myString variable, you'll see that it contains the namespace and class name of the instance. This is known as the 'fully-qualified' object name. That is, to say, it includes the namespace or namespace hierarchy in which the class is declared as well as the class name itself.

BUILD A BASE CLASS

With all that theory out of the way, it's time to start building. Our application is going to consist of two different droid types, each inheriting from a single Droid base class. They'll be instantiated in the Main() method and given a name according to any arguments fed in from the command line. We will then create an input loop that terminates when an appropriate command is entered.

While the main loop is running, the user will be able to select a droid using its name and then issue a command. Some of the commands will be specific to a particular droid sub-type, and so will be implemented in the relevant subclass. So, let's set up the Main() method to implement this structure. The droid instances will have to wait until their classes have been defined. First, we'll define a constant string in the Program class (outside of the Main() method) to indicate what the exit keyword is:

```
const string EscapeCommand = "exit";
```

Now that's done, let's define the input loop inside the Main() method:

```
string command;
do {
Console.Write(">");
command = Console.ReadLine(). ToLower();
} while (command != EscapeCommand);
```

In this code, we're first declaring a string variable called 'command'. Next, we create a 'do…while' loop, which we're using because our user's input is unknown until after the process within the loop is complete. We first write the '>' character to the console, then use 'Console.ReadLine()' to wait for the user to enter an input string. Notice also that a further method is called from 'ReadLine()' – 'ToLower()'. This works because the result of the ReadLine() method is a string which is itself an object. We want the resulting input string to be lower case before being assigned to the command variable, so we use ToLower().

The 'while' condition on the loop will be checked after input, exiting the loop if the command entered by the user is the same as our exit constant.

If you run the console application at this point (hit F5 within Visual Studio), you'll see a console window with a '>' at the beginning of the input line. The console is now waiting for your input, although at the moment it will simply repeat the '>' after each line you type.

In the next article we'll implement the details of the program structure and get our droids accepting commands, as all good robots should.

NETWORK SECURITY

Pro network security scans

Jon Thompson looks at your network infrastructure through a hacker's eyes, using two high-end tools.

WHAT YOU'LL NEED

NMAP
A comprehensive network scanner and operating system identifier. Download it from *www.nmap.org*.

WIRESHARK
Industry-standard network traffic sniffing and analysis software. Find it at *www.wireshark.org*.

WARNING
Don't try anything you read here outside of your local network. Scanning and exploring distant ports or other people's networks is legally questionable, and could land you in very hot water. DON'T DO IT!

While regularly updating your system and having a firewall and antivirus software installed is essential, this isn't always enough to defeat information-gathering tools. Many of the standard tools used by network security professionals (and malicious hackers themselves) are freely available online. They can easily reveal shocking details about your network, and using one gives you a better idea of both the need to secure yourself and what to secure. With a few mouse clicks, you can interrogate machines for what's running behind each open port, get details of the user's operating systems and even find details of their network cards. Here's how to do it, with an important caveat: this is only to be done on your own network. Scanning PCs on the net will get you into trouble.

ALL ABOUT NMAP

Nmap is the work of Gordon Lyon, known to the network security community as 'Fyodor'. What Nmap does is both simple and ingenious. It's essentially a port scanner that's designed to list open TCP and UDP ports on a running, networked computer. Since its initial release in 1997, this simple functionality has been augmented to turn Nmap into a serious network analysis and attack tool.

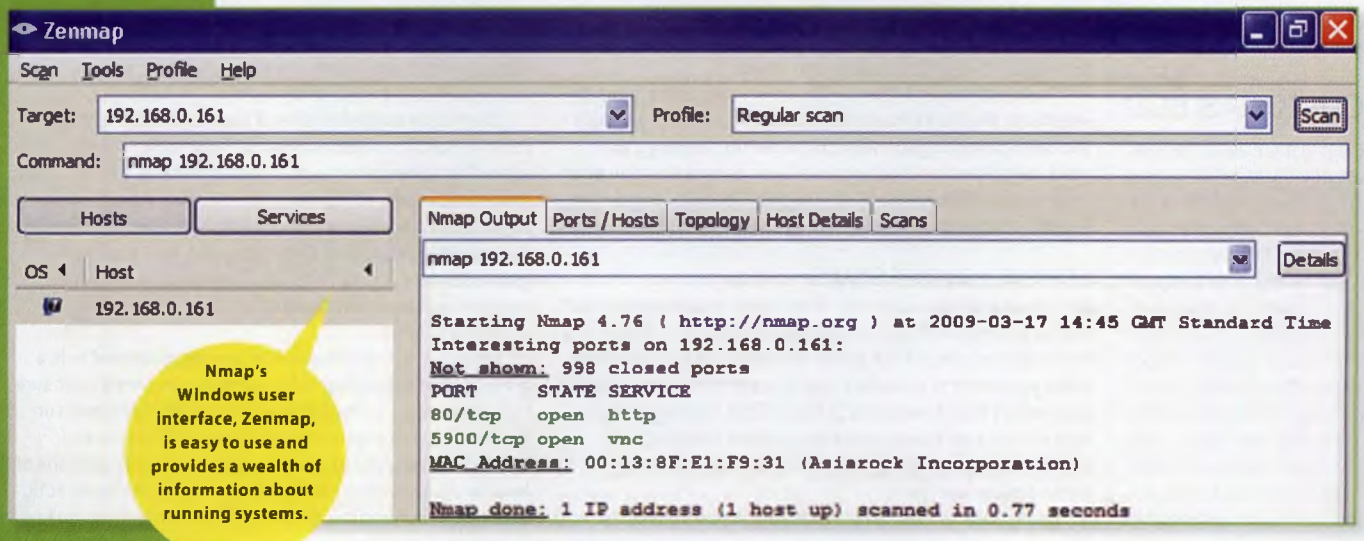
Nmap can find out far more about the target than just which of its ports are open. By sending special sequences of data packets and analysing the results sent back by the target's TCP/IP 'stack' software, Nmap can detect the operating system running on the remote machine with a high degree of accuracy. It can also tell the make and model of the network adapter, the uptime of Linux machines and even the version of the software that's connected to a specific port. This makes this program very dangerous in the wrong hands, but it can also be very useful if you're trying to improve your own security by looking at your system through the eyes of a hacker.

Nmap began life on Linux, but we're going to use the Windows version, which has a graphical user interface that makes things a bit easier to negotiate.

SIMPLE SCANNING

Download the installation executable from **www.nmap.org/download.html** and run it. As part of the installation process, the open-source packet-capture software Pcap will be installed. Nmap needs this software to run properly under Windows, so don't be alarmed when you're asked to confirm this. If you have a previous version installed on your machine, the installation process will uninstall the old one first. Other than this, the whole installation process is a question of simply accepting the licence agreement, then repeatedly hitting 'Next'. After this is done, you can run Nmap by firing up the Zenmap UI, which you'll find on the Start menu. Maximise the initial window when it appears.

Let's now perform a basic scan of a machine. If you've not set up your 'hosts' file to map names to IP addresses,



Nmap's Windows user interface, Zenmap, is easy to use and provides a wealth of information about running systems.

DO THIS... TRACE ROUTES

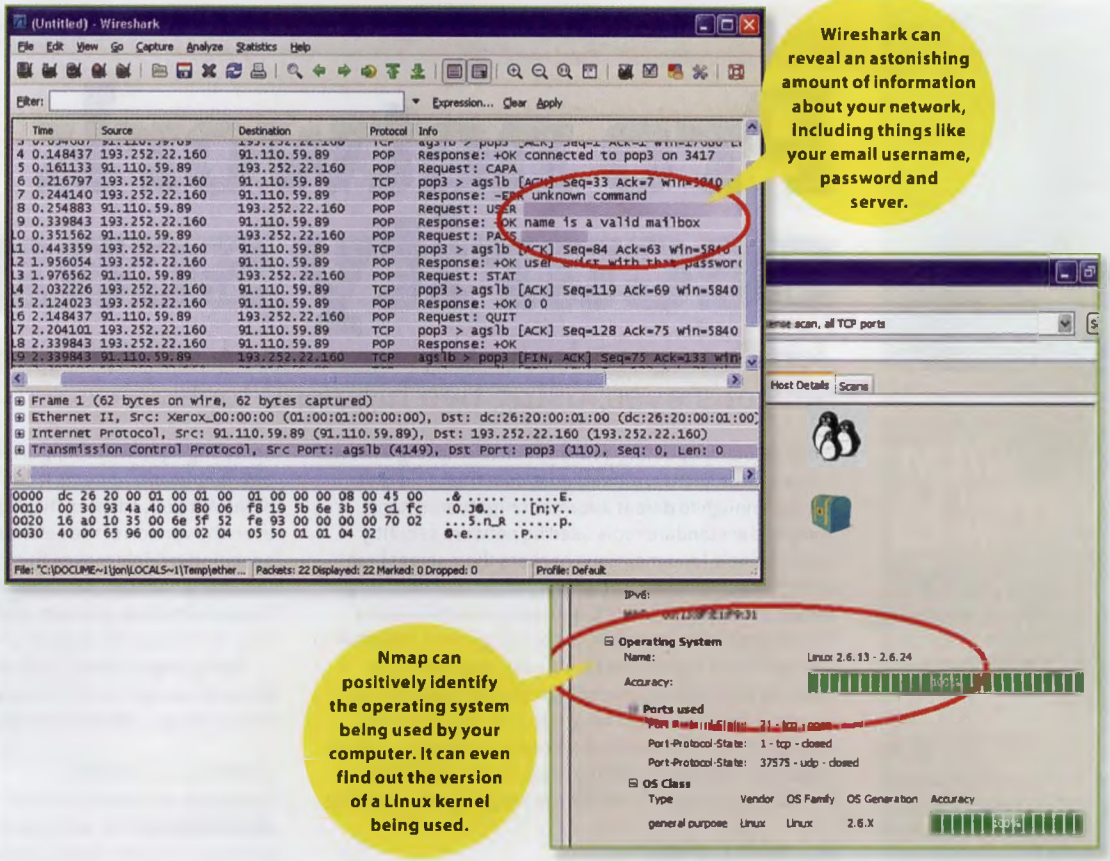
There's a very useful utility bundled with Windows and Linux called 'traceroute' ('tracert' in Windows), which acts like a route finder through cyberspace. Open a command line and enter the name of the command followed by a server address ('tracert www.google.com.au', for example.) A list of 'hops' gradually builds up, showing the route from your machine to the one you specified on the command line.

Traceroute works using the same protocol (ICMP) as the Ping utility. Ping tells you whether a machine is alive and paying attention, but the protocol can also specify how many hops to take before timing out. When this happens, a message comes back to say so. The message contains the IP address of the machine where the ping timed out.

Traceroute deliberately exploits this by sending a ping with a TTL (time-to-live) of one hop. This times out at the first server, returning its IP address. It then sends another ping with a TTL of two, and so on until the IP address or DNS name of the server matches the one you entered.

TIP... THE CUCKOO'S EGG

Learning more about network security doesn't need to be a chore. If you'd like to get clued up about some basic principles and have some fun along the way, grab a copy of Cliff Stoll's famous book *The Cuckoo's Egg*. The page-turner tells of how Stoll tracks a hacker who breaks into his university's computers before moving onto military and space systems. It reads like a thriller, but in fact it's a true story.


Wireshark can reveal an astonishing amount of information about your network, including things like your email username, password and server.
Nmap can positively identify the operating system being used by your computer. It can even find out the version of a Linux kernel being used.

enter the IP of a target, otherwise enter its name into the Target input box at the top left of the interface. In the Profile drop-down menu to the right, select 'Regular Scan' and press the 'Scan' button next to it.

The scan takes a few seconds to complete, during which time Nmap's output is piped to the main pane of the user interface. Launching it on a Linux system with the Apache 2 web server and VNC (remote desktop software) installed reveals almost instantly that port 80 is open for HTTP connections, and that port 5900 is open for remote desktop connections. If this machine were out unprotected in the wilds of the internet, you could expect to see it being probed at least every few minutes by software with Nmap-like facilities in preparation for an attack.

There are several tabs on the main pane of the Zenmap interface. The Ports/Hosts tab enables you to list and sort the open ports on your network, while the Topology tab gradually draws you a diagram of your network as you scan more hosts. Click on the 'Fisheye' and 'Controls' buttons to zoom in and get a better view of the network layout.

COMPREHENSIVE SCANS

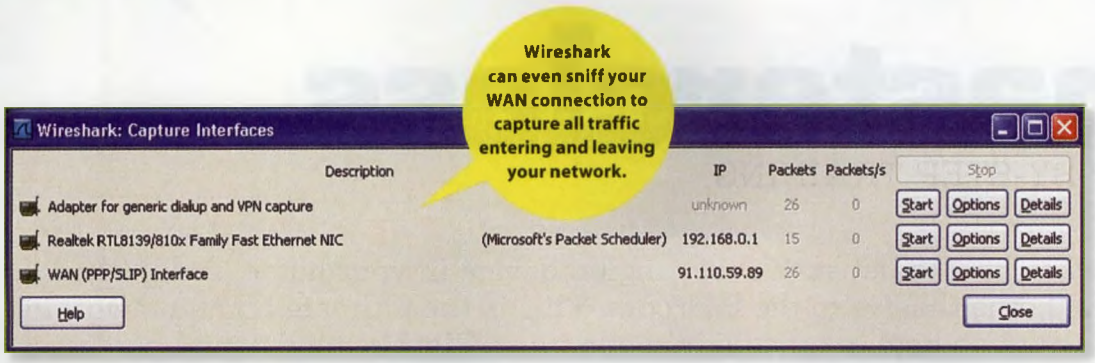
We can use Nmap to discover even more information about the target machine by using some different scan types. Try the 'Intense scan, all TCP ports' scanning option. This takes a few moments to complete, but it scans the entire range of possible TCP port numbers (1 to 65,535), looking for open holes. It also performs operating system identification checks as well as trying to spot the software running behind each open port.

Going back to the Ports/Hosts tab, it now shows not only the two ports we saw a moment ago, but also the names of the applications running on them. In the case of Apache 2, it also displays the version of the software and even the underlying operating system name (Ubuntu, in our case).

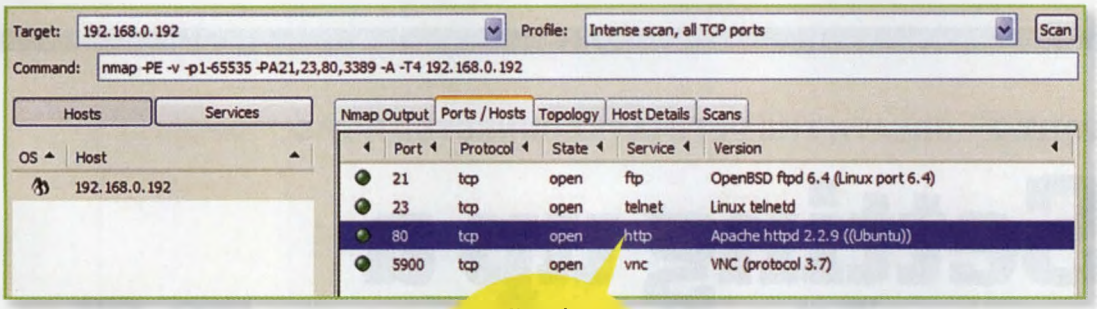
Next, click on the Host Details tab. This is an option that often has the power to shock people into installing a proper firewall. Expand the sections to see more detail. Nmap knows that our machine is running Linux (including the version of the running kernel). It also knows the network card's MAC address, which enables it to look up the manufacturer. Knowing this could give a skilled hacker a means to crash the card. Interestingly, our copy of Zenmap also found a P2P file-sharing application that was running. It was technically connected to a port, but it was not connected to the internet at the time of the scan.

The most comprehensive of the default scans that Zenmap has at its disposal is the 'Slow comprehensive scan'. This takes quite a while to complete, but it leaves no stone unturned while looking for even tiny details of the target host. As you scan more targets, these are added to the topology diagram in Zenmap, giving you a unique graphical view of your network. If you have a network segmented into subnets using a router or switch, try scanning that too.

Nmap — with or without the Zenmap front end — is a great tool for explaining to people why they need to ensure that only the ports they actually need should be open on the firewall, and that using old versions of networked software is very dangerous. For example, older versions of Apache 2 have vulnerabilities that are exploitable directly using a buffer overflow attack. A hacker only needs to know



Wireshark can even sniff your WAN connection to capture all traffic entering and leaving your network.



Nmap is capable of discovering the software running behind a port, which is useful knowledge for hackers planning a subsequent attack.

which version of Apache 2 is being used to decide which attack to try, a piece of information that Nmap can work out in a few moments.

NETWORK SNOOPING

'Sniffing' network traffic as it goes by is another important technique used by hackers, and it can be even more revealing. One industry-standard tool for network sniffing is Wireshark, which was previously known as Ethereal.

During my past life as a network security consultant, one of my jobs was to assess the internal security of networks for corporate clients. The first thing I'd do would always be to set Ethereal running.

I remember one tough assignment where everything seemed very secure indeed. I had nothing much to tell the client in my subsequent presentation and report. However, towards the end of my time on-site, I suddenly noticed some telnet traffic going by in Ethereal, including the username 'root' and a password. My heart leapt. Linux and Unix users will recognise 'root' as the system administration account — the so-called 'super user'.

Telnet sends usernames and passwords over the network as plain text. A system administrator was logging into a server using this when he should have been using a secure connection. I quickly logged into the server myself using the same account, downloaded the system's password file and began running it through a password cracker. I soon realised that usernames and passwords were the same on other servers, giving me free range to log in wherever I pleased.

At the final presentation, I passed an envelope to each of the rather bored-looking network administration team. It was rather satisfying to watch their faces become ashen as they read the messages inside, which told them their personal, supposedly secure account passwords.

But now, back to business. Download the executable for Wireshark and run it to begin installation. During this process, you'll again be asked if you'd like to install Pcap. This time decline, but also untick the Services box on the same screen that allows users without administrator access to capture traffic. This prevents normal users discovering that Wireshark is installed and using it to snoop on others.

Once installed, run Wireshark. The program uses Pcap to put the network card into 'promiscuous' mode, which means that it will accept packets that aren't meant for it. This is easy in Linux, but the writers of Windows never envisioned that such functionality would ever be needed — hence the need for Pcap.

CAPTURING TRAFFIC

Select 'Interfaces' from the Capture drop-down menu and a box will pop up listing all of the interfaces, including virtual ones. You can select any of these and capture traffic from them, but if you're connected directly to your broadband connection, let's try something that might just shock you. Locate the WAN interface. It's the one with a public IP address, and its name will be something like 'WAN (PPP/SLIP) Interface'. Press the associated 'Start' button, and Wireshark will begin its capture.

Now, go to your mail client and set it to download new messages from your ISP's server. Back in Wireshark, you'll see that data will begin to accumulate. After a moment or so, the traffic will subside. Once this has happened, go to Wireshark's Capture menu and select 'Stop'.

Each captured packet has a time, a source and destination address, an associated protocol and a short description of its content or type. Scroll through the data and look for the entries with information columns starting with the words 'Request: USER' and 'Request: PASS'. You should recognise them as being the username and password you used to log into your ISP's mail server — being sent over the internet in clear text!

If your ISP's email server supports username and password encryption, use it to prevent this happening. If it doesn't, but the ISP's webmail interface uses SSL (the URL begins with 'HTTPS'), then use this instead. SSL is ideal if you're worried about your credentials being sent in plain text and intercepted en route, because the connection and information will be encrypted before it even leaves your web browser.

DO THIS... FOLLOW WIRESHARK TRAFFIC

The number of packets Wireshark captures in a very short space of time can seem overwhelming, making following a single thread of traffic seem almost impossible. Luckily, it has some tools to help you follow what's going on.

First, you can filter the display to show only lines containing a certain string. Simply enter, for example, 'HTTP' into the Filter Input box and press Enter.

You can also filter by traffic type. On the Analyse drop-down menu, select 'Display Filters'. This brings up a box containing a number of predefined traffic types. Select one of them and click 'OK'. To clear your filter, select the 'Clear' button.

You can also opt to filter by conversation, which shows just the traffic between two IOP addresses. Select 'Conversations' on the Statistics menu. In the subsequent box, select a tab for the traffic type you're interested in. The known conversations will appear. Right-click on one and select 'Apply as filter > Selected > A<->B'. The main screen will then change to that conversation.

TIP... PROVING IT

If more proof was needed that attack tools such as Nmap are used aggressively to find and help compromise unpatched computers, researchers using honeypot systems to lure hackers have repeatedly discovered that the average time between booting an unprotected machine and that system being compromised was just 20 minutes on average.

masterclass
STEP-BY-STEP TRAINING

IN THIS SERIES

Learn how to network every digital device in your home, everywhere from the home theatre to the bedroom. This is the ultimate home-networking tutorial on how to turn your castle into a 21st-Century digital paradise.

APC EXPERT

THE CONNECTED GUY

David Neiger will be building the connected house in a real home and will be filing regular columns and updating the *APC* web site as he goes along. David is a qualified engineer with many years of networking, IT implementation, consulting and project management experience.

WHAT'S NEXT?

PART 8
AUGUST '09
USING AN XBOX AS A MEDIA PLAYER

PART 7 CREATE THE ULTIMATE CONNECTED HOME

Setting up a media centre PC

In this tutorial we will explain how to set up a media centre PC.

A media centre PC is an ordinary PC that has been designed to behave more like a typical audio-visual appliance, such as a DVD player or Apple TV box. Inside a media centre PC you will typically find a tuner card to receive television, a high-resolution video card with multiple video outputs to allow connection to high-definition televisions, and a multichannel audio board for surround sound.

Whilst a media centre PC could be put into a standard PC case, most ready-built media centre PCs are housed inside special cases with external control buttons and LCD displays to make them look more like audio-visual appliances than beige boxes. Since the media centre PC is usually installed as part of a home-theatre system, special consideration is given to make the unit as quiet as possible. This is so your enjoyment of movies or music is not disturbed by the constant noise of fans and drives (although in reality most media centre PCs do make some noise and are best kept inside a ventilated cupboard).

In forthcoming tutorials we will explain step-by-step how to design and build a media centre PC from components, but in this tutorial we will detail how to set up and use a pre-built device. Our example is the AMD LIVE! Home Cinema PC that we have in the Connected House. This is a classic media centre PC, housed inside a special case that makes it look like it belongs to your stereo. This particular model is not sold in retail, being used by AMD as a demonstrator of its media centre chipset technology. However, for our purposes, it functions just like any other media centre.

Although a media centre PC may look like an audio/video appliance when properly configured, it is still a computer with all of the maintenance and configuration required to get a Vista computer working properly. Unlike an appliance, which you basically turn on and use, our Connected Home media centre does require some setup and constant maintenance, which is why the media centre PC option is not for everyone. If you just want to watch Blu-ray movies, download and listen to music from the Apple Store or record television programs, it is easier and cheaper to buy an appliance than run a media centre PC.

This is because appliances are designed for specific functions, making it much easier for the manufacturer to develop firmware for them. Since they are also meant to be used with a remote control, they have an optimised easy-to-use menu system. Firmware is proprietary and generally does not need frequent upgrading as the manufacturer has full control of the hardware in the appliance, so there is little maintenance required. Appliances are also generally not susceptible to infection from computer viruses, and since the user has limited access to what can be configured, they are more robust and stable than a PC.

However, appliances are limited and often impossible to upgrade. Even though there is a reasonably powerful computer inside an Apple TV, you cannot simply change the software and use it to download BigPond Movies. Upgrading the pitifully small hard disks inside most appliances generally involves voiding the warranty, and in many cases the new hard disk won't be recognised or work properly. Manufacturer provided upgrades are often far more expensive than the cost of the components making it generally cheaper to throw out the out old appliance and replace it with a new one.

Appliances are also closed source, which means if you want to replace the menu system or want to add additional functions you can't. Many appliances also go overboard with DRM (digital rights management) making it impossible to copy content off the device to use it on your computer or other device. This doesn't just apply to copy-protected content (such as downloaded movies); even free-to-air television recordings are encrypted and locked up tightly on a TiVo and other PVRs.

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If you are technically competent, a media centre PC gives you lots of flexibility.

If you are technically competent and are prepared to do the work, a media centre PC gives you more flexibility than any appliance. Most media centre PCs ship with Vista Home Premium or Vista Ultimate and use Microsoft Media Center software.

If you don't like the Media Center software you can always replace it, although this can be quite difficult as you need to obtain the necessary drivers for the hardware and ensure the new software supports the components in the machine. If you are able to program, you could go fully open source using Myth TV and code any additional functionality you want into the software, but you would need to have a lot of spare time on your hands, as this is not as easy as it sounds.

Since media centre PCs use standard PC hardware, they are upgradeable (although not all components will fit in the case or work properly with the existing components). You can increase hard disk capacity by installing a larger or secondary hard disk, upgrade to Blu-ray by replacing the DVD drive with a Blu-ray unit (and appropriate software) and theoretically take advantage of new audio-visual technologies by loading new software.

The AMD LIVE! Home Cinema PC looks about as close to an appliance as you can get. The front of the unit has a volume control knob, push buttons to access certain functions, an LCD status display and infra-red remote. On the back of the unit are all of the usual PC connections (network, USB, VGA) as well as an HDMI output, component video, antenna connector, S-Video, composite video, digital audio and surround sound speaker connectors.

Since the AMD LIVE! has its own built-in surround sound decoder with amplifier, we could connect our surround sound speakers directly to the unit, eliminating the need for yet another remote control for our surround sound amplifier. If we wanted to use our own surround sound amplifier we could simply connect the HDMI output from our media centre PC to the amplifier and then the amplifier back to the Bravia television (or use the digital audio output from the AMD LIVE!).

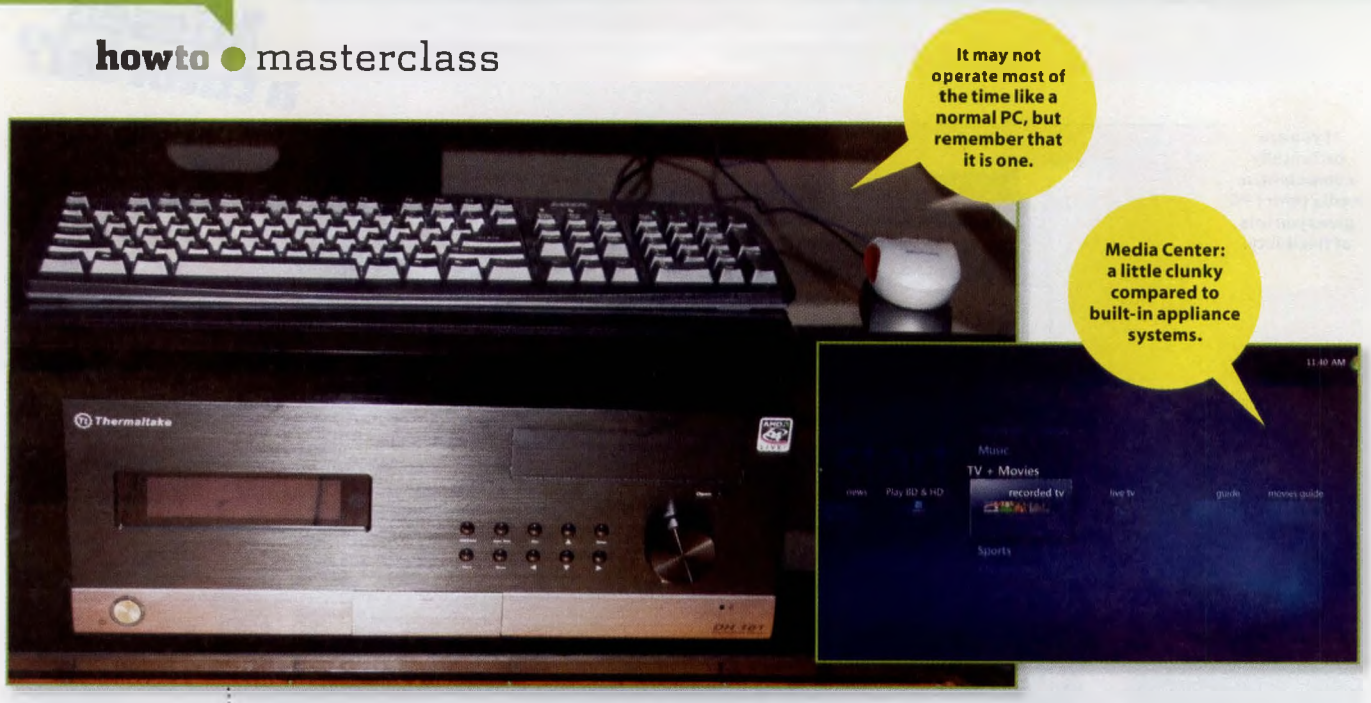
In theory, all we need to do now is turn on the AMD LIVE! and it should work as all of the software and drivers have been preloaded.

I cannot emphasise enough that no matter how it may look on the outside, a media centre PC is a Vista computer that requires constant maintenance and upgrades. Ours is no exception. The unit turns on and automatically runs Microsoft Media Center, but behind the pretty screen are the numerous prompts to download and install all of the upgrades that have become available, since the software image was installed at the factory, which in this case is lots.

Whilst the remote control does allow you to work the mouse and use a virtual keyboard, it becomes a real pain when doing maintenance or installing software, particularly since it is difficult to control the pointer using the four directional buttons on the remote. A wireless

DO THIS... USE HDMI

If we want to playback Blu-ray disks in full high definition we must use the HDMI output, since copyright restrictions require all analogue outputs to be downgraded to standard definition only. This isn't a problem for us, since our Sony Bravia Z Series TV has HDMI inputs, but it may be a problem if you have an older model television or projector that only supports component or VGA inputs.


It may not operate most of the time like a normal PC, but remember that it is one.
Media Center: a little clunky compared to built-in appliance systems.
Thermaltake
Music
TV + Movies
recorded tv
live tv
guide
movies guide
Sports

MORE ABOUT
AMD LIVE! HOME CINEMA

Designed to stand alone in the living room as a complete home theatre system, the AMD LIVE! Home Cinema gives you a single remote control for navigating and playing digital entertainment.

Powered by AMD multicore processors, it gives the required performance you need to view and organise digital media, surf the web, download movies and record broadcast video.

Features whisper-quiet acoustics so as not to interfere with your digital entertainment.

Remote control driven — no keyboard or mouse required.

keyboard such as the Logitech diNovo Edge (with built-in mouse touchpad) is a really good investment as both a time and sanity saver.

After the Vista updates are installed (several reboots later) it comes time to upgrade the drivers and the software. This can be a time and bandwidth-consuming experience, which is why you can see that buying a media centre PC for a computer illiterate family member is a really bad idea!

Upgrading done, now it is time to install antivirus and anti-spyware software. Remember, this device is a PC, which means it can be infected from a computer virus from your network or when using the internet.

So after you have updated Vista, loaded software and driver updates, rebooted several times, clicked through various AUC screens and confirmed that you are sure many times over, you are now almost ready to start watching TV.

I personally am not a fan of Windows Media Center, which is sluggish and clunky, especially compared to the slick and easy-to-use menu systems built into most audio-visual appliances. Automatic program guides do not work for Australia (although the EPG does work to some extent) and tuning the TV is slow and sometimes a hit-or-miss affair, even with a good digital antenna.

Nevertheless, there are advantages to the Microsoft Media Center software. Firstly, it is built into the operating system (so you don't need to buy or download other software), it is well supported by the remote, and you can download software to increase functionality. If you want to watch streaming media from YouTube and other sources you will either need to use Internet Explorer (cumbersome) or download additional software since this functionality is not built into media centre.

There is a free utility called Yougle, which can be downloaded from **http://tinyurl.com/55m26n**, which claims to be able to allow you to access YouTube videos directly from Media Center. If you want to add support for iTunes you can download and install MCE Tunes from **www.mcetunes.com**. The software costs US$14.99 for the standard version and US$29.99 for the Pro version, which supports video.

If you use Telstra as your internet provider (or want access to a very large selection of downloadable movies) then we recommend using BigPond Movies. The advantage of BigPond Movies for Telstra customers is that the downloads are unmetered, which means you can download movies, trailers and music without using up your download quota.

Integrating BigPond movies with Media Center is a straightforward process once you have installed the software. Log into **www.bigpond.com** and sign up for BigPond Movies. From the main movie screen there is an option to download the MCE integration software. You will need to watch Internet Explorer closely, because by default it will block the ActiveX controls needed to download and install the software. After you click your way through the security screens and download the software you will need to reboot the machine even if you aren't prompted to do so.

After the media centre PC reboots you can use Media Center to go to the Online Media menu where you will see an icon for BigPond Movies. You will then be able to select and download movies directly from within Media Center.

Depending upon the speed of your internet connection, it may even be possible to watch the movies whilst they download. We have BigPond wireless broadband in the Connected House and found that movies were ready to watch within a few minutes, although the download took some time to complete sometimes causing playback to stall. If you have BigPond cable, movies will often download fast enough to allow immediate playback.

If you don't have BigPond internet or unmetered access to the BigPond movie site, be aware that movies can be quite large (215MB for a 20-min television show and up to 1GB for a full-length movie).

As you can see from this overview, a Windows Media Center PC is probably not for everyone. They are fiddly to install and maintain and require additional downloads (some free, some paid for and some which just don't work) in order to get the functionality you might want.

In our next instalment, we will look at the easier option of using an Xbox as your media player. APC

IN THIS SERIES

Did you build a web site and nobody came? Ash Nallawalla explains why and how you can attract the right visitors. This month we look at sites whose ranking has fallen. This is advanced SEO.

APC EXPERT

ASH NALLAWALLA

Ash Nallawalla manages natural and paid search traffic for some of Australia's largest web sites. He is an internationally acknowledged expert in search marketing and he previously operated an SEO training business. This article series is excerpted from his training notes. Ash can be contacted at ash@melbpc.org.au and he blogs at ***www.netmagellan.com.***

WHAT'S NEXT?

PART 11
AUGUST '09
THE ESSENTIAL SEO TOOLKIT

PART 10 SEARCH ENGINE OPTIMISATION

Understanding search engines

Is your site not ranking quite the way it used to? If so, check out the following tips.

Often the web site owner calls for SEO help when traffic has dropped and not recovered for some time. The site had good ranking but now it's nowhere to be found on search results. Perhaps the site owner has done something to attract a penalty, but more often than not the penalty is really an algorithm change, such as a new filter. Here are some known penalties applied by Google.

BAN

Google and other engines sometimes ban a site by manually removing it from the index. This is usually for some serious breach of its guidelines for webmasters. Using the 'site:' search operator in Google (which allows you to specify that results must come from a specific site), results in a 'matched no documents' error message. If you see even one page of the site in the results, then it is not a ban and you need to treat it as a filter.

DUPLICATE CONTENT

Some novice web designers cheat their clients by copying content from elsewhere. Some customers even ask for this copying to happen. Either way, it is a breach of copyright and can get the site removed from the search engines (which scares the SEO more than legal implications).

HOW TO AVOID DUPLICATE CONTENT

- **Use Unique Content.** This is the obvious recommendation. Where there is an overwhelming desire to copy content, usually in multinational companies, try to be at least 30% unique on each page (there is no precise percentage — more is better).
- **Use 301 Permanent Redirects**. Many people buy additional domains and then forward them incorrectly. While they think they have multiple web sites, Google chooses one of them as the official one and ignores the rest. This can be fixed by placing a 301 redirect from the secondary sites to the one and only official site.
- **Use CNAME aliasing correctly.** CNAME records in the DNS are canonical domain name aliases. For example, **www.example.com** may lead to the same web page as **example.com** or **server2.example.com**. This becomes an issue for SEO if others link to the "wrong" alias.
- **Avoid Repeating Disclaimers.** Some sites repeat a disclaimer or some boilerplate text on every page. These can be placed in an Iframe.
- **Block Appropriately.** Some sites have a "printer-friendly" or mobile copy of its pages, which should be blocked via robots.txt or a noindex meta tag to avoid a duplicate penalty.
- **Understand Your Architecture.** Some CMSs, forums and directories can display the same page through several URLs, which can lead to a duplicate penalty. A meta robots noindex tag should be on any page that requires a user to be logged in to view the content.
- **Syndicate Articles Carefully.** Make sure people who copy your content link back to you, otherwise you may find their copy is seen as the official one and yours is deprecated.

SOLVING A DUPLICATE PENALTY

- Place a 301 redirect to the desired site.
- Or build a new site with unique content at the other domain. If the content is complementary, it would make a great source of links to the main site.

SUPPLEMENTAL RESULTS

Supplemental Results in Google are in a secondary index and are shown only when there aren't enough results in the main index. Sites end up in the Supplemental Index when pages have duplicate content, insufficient links or insufficient PageRank.

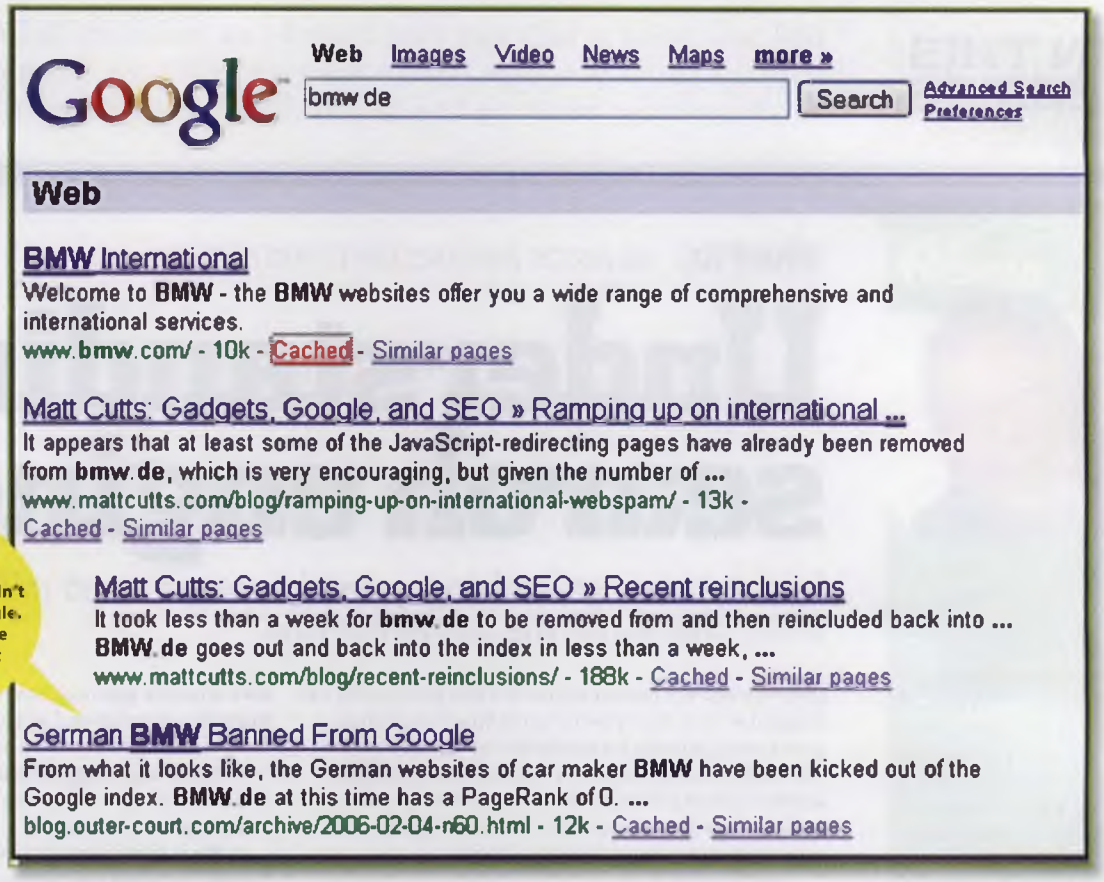
They can be forwarded pages or 404s that used to have their original content. These disappear from the index after one year. Duplicate pages that still show content are hard to get out of Google and are not often visited by the Googlebot.

RECOVERING FROM SUPPLEMENTAL RESULTS

Supplemental results are not a penalty for violating the

MORE ABOUT... NO SANDBOX

There used to be a theory in 2006 and earlier that all new web sites with new domain names were deliberately not ranking for six months. It has since been proven that there is no Google sandbox, but there are filters that prevent some sites from appearing for some time.


Google
Web Images Video News Maps more »
bmw de
Search
Advanced Search
Preferences
Web
BMW International
Welcome to BMW - the BMW websites offer you a wide range of comprehensive and international services.
www.bmw.com/ - 10k - Cached - Similar pages
Matt Cutts: Gadgets, Google, and SEO » Ramping up on international ...
It appears that at least some of the JavaScript-redirecting pages have already been removed from bmw.de, which is very encouraging, but given the number of ...
www.mattcutts.com/blog/ramping-up-on-international-webspam/ - 13k - Cached - Similar pages
When bmw.de was banned, it couldn't be seen in Google. (It should have been the first entry.)
Matt Cutts: Gadgets, Google, and SEO » Recent reinclusions
It took less than a week for bmw.de to be removed from and then reincluded back into ... BMW.de goes out and back into the index in less than a week, ...
www.mattcutts.com/blog/recent-reinclusions/ - 188k - Cached - Similar pages
German BMW Banned From Google
From what it looks like, the German websites of car maker BMW have been kicked out of the Google index. BMW.de at this time has a PageRank of 0. ...
blog.outer-court.com/archive/2006-02-04-n60.html - 12k - Cached - Similar pages

MORE ABOUT... FILING A RECONSIDERATION REQUEST

If you suspect a Google spam penalty and have cleaned up your site, you need to file a Request for Reconsideration from the Webmaster Tools Dashboard.

Google Guidelines for Webmasters. The challenge is to obtain quality links to inner pages, which is not practical if you have thousands of pages.

Some tests suggest that if you buy an expired domain name and host it with a 301 redirect to the Supplemental or "sandboxed" site, the problem will go away.

HIDDEN LINKS

If you use a shared web host that is run by an inept operator, you might find that someone has inserted links to bad neighbourhoods by using Cross-Site Scripting (XSS) and other techniques. This can earn a ranking penalty.

PAID LINKS

Recently, Google has started demoting sites that sell links, so their customers' sites also go down. The only solution here is to get natural links (or natural-looking links). One paid links provider provides code that lists the expiry date of those links — this is an easy way for a spider to find and demote them.

RISKY SEO TACTICS

There are a few so-called SEO tricks that no longer work, or will not work once the search engines can filter them algorithmically. Some of them are known as the tools of trade of "black hat" operators. Others are "legitimate" practices that work and are legitimate because the search engines appear to be oblivious to them so far.

HIDDEN CONTENT

<!-- this is a comment. keyword1, keyword2 -->

Comments are not useful for improving rankings because they are meant to be ignored. Stuffing keywords in them will not help and will needlessly weigh down the page.

CLOAKING

Cloaking means showing one page to the search engine spider and another to humans. At its worst, the search engine might list some innocuous content, while you see a very offensive page when you click the result link.

You can confirm that cloaking is being used by comparing the web site with the version frozen in the Cached copy in Google. BMW Germany was caught doing this in early 2006 and was used as a warning to others by removing it from the index for a few days.

SAME COLOURED TEXT AS BACKGROUND

In the early days of SEO, you could stuff keywords on a page and make them invisible by colouring the text the same as the background, eg. white text on a white page. You can sense this is happening when there appears to be a lot of blank space on a page. By selecting "all" on the web page (press Ctrl and A), the hidden text is revealed. If you are solving a ranking problem, this is something you can look for.

HIDDEN TEXT

Hidden text is not always the same as using same-coloured text as the background. It can be achieved through the cascading style sheet (CSS) so that the text is not displayed (but is there). Its position can also be outside the

screen, using negative coordinates. Such tricks are a sign of laziness — the same effort could be applied towards adding visible text to a page.

RECIPROCAL LINKS

Reciprocal links are recommended only between highly complementary sites, eg. a real estate agent in North Sydney linking to another agent in South Sydney,

THREE-WAY LINKS

To get around the problem of two non-complementary sites needing links, some people will say, "If you link to my site, I will get a third-party site to link to you." After all, how would Google know that the third-party link to your site has anything to do with your link to mine? If the "third-party" domain name is owned by the same person, and both are on the same IP address, it is easy to make this assumption.

INVESTIGATING AN IP ADDRESS

For many years, Google has had access to "whois" records, which show who owns a domain name (unless it is a private registration). There are web sites that will show you detailed information such as all the sites hosted at a single IP address. Why is this useful?

If you rented a dedicated web server, which is a computer in a data centre that is entirely yours to use, it is reasonable to assume that all web sites on that IP address are within your control and are probably owned by you.

For example, ACP owns many well-known magazine properties such as Cleo, Cosmopolitan, FHM and many others (none of which are doing anything questionable, but we are using them as an example). MyIPNeighbors.com (left) shows all the domain names hosted at that IP address (only if their robot has crawled that IP address).

Yes, as soon as you buy a domain name, the spider from MyIPNeighbors.com will test it to see if a web site exists. If so, it will be added to its knowledgebase.

The US government copyright agency also shows submissions from online service providers who have listed all their active domain names. URL: **www.copyright.gov/onlinesp/list/**. The companies who are listed here are protected by the Safe Harbor provisions of the US Digital Millennium Copyright Act (DMCA) of 2003. ISPs or web hosting companies can avoid prosecution if one of their users posts material that belongs to someone else. Of course, this is a very small list of companies, but it all helps. There could be many other resources available to search engines that can help to corroborate ownership of domain names.

ARTIFICIAL LINK NETWORKS

Some SEO companies are known to create artificial link networks for their clients and to help others who can help in some way, such as by providing a reciprocal link. One implementation is for the client site to have a page full of anchor-text links to other non-competing web sites. Say, the client site is a real estate agent in Sydney, so their "network" page will contain links such as:

- Home for sale Melbourne
- Kew East property
- House and land packages Melbourne
- Croydon real estate agent, and so on

The tactic here is strengthening various popular keyphrases for specific web sites. This is a legitimate SEO technique when a given keyphrase is the anchor text for links from several unrelated web sites. However, when several web sites repeat a very similar set of links, none of which point at their own pages, it looks like a three-way link network on steroids.

myIPneighbors
reverse IP domain check

Search [ ] search

What is my IP neighbors?

apcmag.com has address **125.7.5.1**

Domain	Last Checked
30daysoffashionandbeauty.com.au	2009-03-22
acpmag.com	2009-03-22
apc.com.au	2009-03-22
apcmag.com	2009-03-22
apcmag.com.au	2009-03-22
apcmagazine.com.au	2009-03-22
apcmagazines.com.au	2009-03-22
apcmagpro.com	2009-03-22
apcpro.com.au	2009-03-22
apcstart.com	2009-03-22
classic.fhm.com.au	2009-03-22
cleo.com.au	2009-03-22
cosmoapartment.com	2009-03-22
cosmoapartment.com.au	2009-03-22
cosmopolitan.com.au	2009-03-22
extras.apcmag.com.au	2009-03-22
fhm.com.au	2009-03-22
gourmettraveller.com.au	2009-03-22
gourmettravellerwine.com.au	2009-03-22
houseandgarden.com.au	2009-03-22
madisonmag.com.au	2009-03-22
myapcmag.com	2009-03-22
philips.fhm.com.au	2009-03-22
shoptillyoudrop.com.au	2009-03-22

SITEWIDE LINKS

Also known as Run-of-Site (RoS) links, sitewide links appear on all pages of a given site. They are usually sold as advertising, therefore they appear not to be "link buying" which is likely to get you banned by Google.

So how do you distinguish between link buying and advertisements? Any ban by Google or other search engines is likely to be on a case-by-case, manual basis. A RoS listing that uses keyphrase anchor text and a clean link is a possible ban candidate. Since genuine ad companies are likely to count clicks or impressions, they may escape the link through a counting script.

PURCHASED LINKS

The situation with bought links is similar to RoS linking except that there is usually just one link per customer and it is often on the home page. Such a link can be within a blog posting that purports to be a review. Again, clean anchor text is a giveaway and bans are on a case-by-case basis.

Google's Help pages say "Buying or selling links that pass PageRank is in violation of Google's webmaster guidelines and can negatively impact a site's ranking in search results." Tread carefully.

DON'T DO THIS... KEYWORD STUFFING

When you look for every opportunity to load keywords (typically in the code) and exceed the recommended limits, you could be accused of keyword stuffing. The general advice is "don't".

downtime

HIGH-PERFORMANCE PLAYTIME

STM 13 & 15in TURTLE

01

Laptop sleeves are a dime-a-dozen nowdays. STM has taken the concept one step further with the release of the STM Turtle. Like its namesake, the Turtle is a hard-shelled sleeve that offers more protection than its average competitor. Turtle is made from compressed EVA, which creates a firm, shape-holding sheath around your laptop to keep it safe from scuffs and accidents. The 600D jacquard fabric provides a texture that is not only good to look at but creates a non-slip surface to avoid any accidental dropping. The addition of elastic loops and toggles ensure that the Turtle is securely shut around your precious laptop. ***CZ***

.: CONTACT STM
.: ONLINE www.stmbags.com.au
.: PRICE $69.95

BLUETEK MULTI CHARGER

02

Oh yes, we've all gone wireless. So wireless that there's about a gajillion chargers and cords you have to remember to take with you on a trip. This BlueTek Multi Charger is the eight-headed hydra of chargers: one end can plug into a car charging socket, a power point or a USB port, while at the other end, it can do iPod, mini USB, micro USB, new Nokia and old Nokia. Sucks to be a Sony Ericsson owner, though. Also, it doesn't put out enough juice to charge a TomTom or any appliance that needs more than its 1A output capacity. It's surprisingly decently priced at $49.95, so there are more reasons to grab yourself one of these than not. ***DW***

.: CONTACT Bluetek
.: ONLINE www.bluetek.com.au
.: PRICE $49.95

ILUV IN-EAR CLIPS

03

These iLuv in-ear noise-reduction headphones are designed for superior comfort and fit with ergonomic grooves that slip over your ears to ensure that the headphones never come loose. This makes them ideal for any sports enthusiast or jogger who's sick of constantly jamming their headphones back in their ears. Noise-reduction technology makes for a purer listening experience that requires lower volume settings to make the music clearly audible to the listener. In-ear speakers also combat external noises and add clarity to make this iLuv range some of the best mid-range headphone units available on the market today. ***CZ***

.: CONTACT iWorld
.: ONLINE www.iworldaustralia.com.au
.: PRICE $24.95

LEAPFROG TAG

04

Anyone who has kids would know how time-consuming it is teaching them to read. Leapfrog has come up with the Tag system that allows kids to read on their own with a helping hand from what is essentially an interactive talking pen. When used in conjunction with Leapfrog books, the Tag allows kids to use the pen to highlight words they are having trouble with. The pen will then recognise the word and say it out loud for the child. With character voices, music and sound effects, the Tag turns books into an audible experience that integrates educational games and reading. If you're having trouble getting your kids to want to learn, grab a Tag and trick them into it. ***CZ***

.: CONTACT Leapfrog
.: ONLINE www.leapfrog.com
.: PRICE $99.95

RAZOR CARCHARIAS

05

The Razer Carcharias features a circumaural shape to allow full over-ear coverage, making them extremely comfortable for those prolonged bouts of gaming in front of the PC. The Carcharias headset also boasts impressive audio clarity, with a deep, thumping bass. A noise-filtering microphone works to reduce background noise for clear voice-over in the most noise-polluted gaming areas. Additionally, a conveniently placed inline remote lets users quickly and easily adjust volume and mute the microphone without having to fish around on the keyboard, while the three-metre cable with gold-plated connectors ensures a secure connection. Nice. ***CZ***

CONTACT	Audion Innovision
ONLINE	www.audion-mm.com
PRICE	$199.95

ILUV STEREO SPEAKERS i189

06

These contemporary, stylish-looking speakers boom out a louder, deeper sound than you'd expect from such a compact unit that sits at only 21cm wide.
We could hear them quite clearly from one side of the office to the other until prudency forced us to turn them down. With 3D sound and a push-open iPod dock drawer, the i189 also offers something many other iPod docks don't: the ability to recharge your iPod while listening to it. This may sound like a given, but it is surprising how many docks out there don't cater for this obvious need. With the capability to take any model of iPod (except shuffle) the i189 would make a great addition to your digital life. ***CZ***

CONTACT	iWorld
ONLINE	www.iworldaustralia.com.au
PRICE	$99.95

ALTEC LANSING ORBIT M

07

The Baby Boomers are going to hate this. Just when you thought that headphones were loud enough, along comes the Orbit M speaker that plugs straight into your headphone socket to provide listeners (whether they want to or not) with good, clear-sounding music from any device. The Orbit M comes with its own protective pouch, is small enough to be truly portable and is rugged and durable enough for the most intrepid traveller. The full-bodied, 360-degree sound is better than anything we've heard from a speaker of its size. The Orbit M is light on power so you can keep the music pumping long into the night. No matter where you are. ***CZ***

CONTACT	Altec Lansing
ONLINE	www.alteclansing.com
PRICE	$69.95

OLIN MOBILE NOTE TAKER

08

The Olin Mobile Note Taker is a combination of a small LCD sensor and motion-tracking pen that combines ultrasound and infra-red technologies to enable you to record what you write or draw. With sophisticated algorithms, the movements of the tip of the pen are converted into a vector image of the user's handwriting. Up to 100 A4-sized pages can be saved at one time before being uploaded to your PC as a JPEG. Or, if you like, you can plug the note taker directly into your PC and it will act as a writing tablet for drawing/design purposes. The added bonus of handwriting-recognition software should speed-up the process of converting your notes to Word. ***CZ***

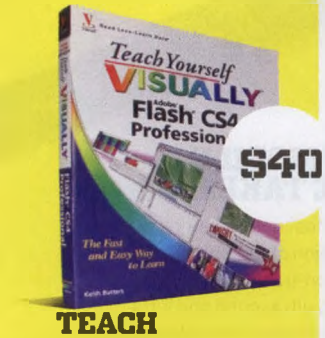
CONTACT	Olin
ONLINE	http://olinstyle.com/
PRICE	$149

Inprint
Tech books

$43

HOW TO DO EVERYTHING: UBUNTU
www.mcgraw-hill.com.au

Be led step-by-step through the interface, the built-in apps and the process of installing software and peripherals. You'll get details on the full-featured OpenOffice.org productivity suite, as well as an insight into graphics, photos, music, videos, and games. Works for both PC or Mac.



$40

TEACH YOURSELF VISUALLY: FLASH CS4 PRO
www.wiley.com.au

Clear, step-by-step screen shots arranged in two-page lessons show you how to tackle more than 140 Flash CS4 Professional tasks. Learn how to create objects, symbols, and instances; control playback with the Timeline; add interactivity with buttons; organise project assets with the Library; create animation with tweens; as well as add sound and video. Helpful sidebars offer practical tips and tricks, and it's all presented for the visual learner. ***CZ***

DOWNTIME REVIEW

SingStar wireless microphones

No more tripping over microphone cords! Now you can sing, dance and navigate the SingStar menu practically hands-free.

With over 200,000 homes in Australia currently getting down with SingStar on either the PS2 or PS3, Sony has taken the next logical step with this technology and have introduced wirless microphones to the market.

With the trend of SingStar parties pervading the Australian culture, this 'game' has personally killed most sales of other karaoke alternatives while becoming the twenty-first century equivalent of singing around the piano (ask your grandparents).

The loss of leads free up the SingStar user to express themself a bit more freely, while removing a trip hazard from the home. A brand-new Voice Control function that comes into effect with the new SingStar Pop Edition means you won't need to worry about picking up your PS3 controller as you sing along.

Simply speak into your Wireless SingStar Microphones to announce which track you want to sing next and Singstar will take you straight to it. Or, with the right commands, you can search through your SingStore Carousel at varying speeds by using your voice.

Wireless SingStar Microphones come with improved high-quality sound and are compatible with both PS2 and PS3. The only catch at the moment is that the voice control will only work on SingStar Pop and future releases. That aside, this is a definite improvement to the whole SingStar experience that will make embarassing yourself a whole lot more convenient (and fun).

Christopher Zammit

.: CONTACT Sony Australia
.: ONLINE www.au.playstation.com
.: PRICE $110

$110

8
10

50 WORDS
. . .on why you need some iLuv

Last month's competition was so popular that iWorld have kindly donated a few more gadgets for us to give away. So just like last month, all you have to do is tell us in 50 words (or less) why you need some iLuv. The prize pack consists of iLuv 3D surround stereo speakers, two clear iPod nano hard cases, a pair of iLuv Lightweight ear-clips and a pair of iLuv noise-isolation earphones.

Entries close July 16th. Winners will be contacted by email.

Email your entry to:
downtime@acpmagazines.com.au

MP3 PLAYERS

With the placement of iPod docks in most electronic devices, as well as the availability of portable speakers, the MP3 player has become the new standard in music entertainment. How can you not love something that can hold every CD you own and fits into the palm of your hand?!

What's hot & not

TECHNOLOGY THERMOMETER

COMPACT DISCS

They scratch too easily, they're a pain to keep swapping in and out of your CD player and they only hold about 30 songs at most. Now they are just a means of transporting music from the shop to your iPod, before getting stored on a shelf.

BLU-RAY PICKS OF THE MONTH

CONTACT Twentieth Century Fox
ONLINE www.foxmovies.com.au
PRICE $90

X-MEN TRILOGY

Everybody's favourite mutants are back and are now available in HD. All three X-Men films have been given the Blu-ray treatment and released as a nicely priced box set just in time for the cinematic release of *X-Men Origins: Wolverine*. With a total of nine discs, HD video/audio transfers and dozens of special features, this is the Blu-ray release of the season for the comic movie nut in your circle of friends and family. All three films look and sound great as you'd expect, with the visual effect scenes coming across as sharp and punchy. Get your claws out for the rush this one will cause at the video store. ***CZ***

CONTACT Icon Films
ONLINE www.iconmovies.com.au
PRICE $44.95

CITY OF EMBER

Ember is an underground city built to house the survivors of a world-ending apocalypse. After two hundred years the city's generators randomly plunge the city into darkness as they begin to fail. With not much time left, two teens, Doon and Lina, stumble across old instructions explaining how to get back to the surface. With Ember's Mayor (Bill Murray) set on stopping them, they set off on an adventure to save everyone in Ember. Great visual effects and amazing set pieces make this great escapist cinema (pardon the pun). With good performances and an other-worldly feel, this is one for any sci-fi fan. ***CZ***

CONTACT Warner Brothers
ONLINE www.warnerbros.com/
PRICE $42.95

YES MAN

Remember the days when Jim Carrey was actually funny? Well, those days are back with the release of *Yes Man* on Blu-ray. What at first looks like a remake of *Liar, Liar* is a smart comedy that gets audiences laughing again with the story of Carl (Carrey), who decides to turn his less than perfect life around after attending a self-help seminar that teaches him that saying no is bad. With this new-found philosophy that makes him say yes to absolutely everything, Carl sees his life go from bad to better in the most unforeseen (and funny) ways. *Yes Man* is a feel good movie that we dare you to say no to! ***CZ***

Original Treks hit Blu-ray

The original Enterprise crew makes the trek to Blu-ray and DVD.

With Kirk, Spock and Scotty once again warping across the big screen in J.J. Abrams' rethinking of the Star Trek franchise, Paramount Pictures has taken this opportunity to bring the adventures of the original Enterprise crew to Blu-ray.

Presented as part of a box set, this is the first opportunity for trekkies to see the classic films with digitally remastered high-definition pictures and sound that looks as good as it did on the big screen when they were first released. The Star Trek original motion picture collection features the first five films in the Blu-ray box set, with the DVD collection containing the first six. With hours of extra features including original interviews and behind the scenes specials, there is plenty here to keep any Trek fan happy. As good as the new film is, you can't help but appreciate how great the originals are when you see them presented like this. There is no mistaking why these films have lived long and prospered. ***CZ***

Quikfix
New releases

MARIO TENNIS

The second title released in Nintendo's recent 'New Play Control' series (of GameCube games ported over to the Wii), Mario Tennis offers that familiar Mario-brand sports-game experience: zippy, souped-up contests involving lots of crazy characters, power-ups and unlockables. Lots more to it than everyone's old fave, Wii Sports Tennis, but missing some of the enjoyable simplicity of that game.

ANNO 1404

We took a sneak peak at the latest dose of Ubisoft's long-running real-time strategy city-building series Anno 1404, taking place primarily in the Orient late in the middle ages. True to the series' history, players start out with next to nothing and are expected to expand and produce everything from resources sourced in the environments. The build we saw showed excellent potential and is definitely one to look out for (for all the RTS nuts).

A Vampyre Story

Peter Dockrill sinks his teeth into an old friend.

It wasn't all that long ago that the graphical adventure title was *the cutting edge* of gaming entertainment on the desktop PC. Before the advent of modern 3D graphics, 2D graphic adventure games — pioneered by Sierra in the eighties and refined (if simplified) by LucasArts in the nineties — introduced a generation of players to a witty and wondrous world of interactive storytelling. Classic titles like Space/Police/King's Quest and the Monkey Island series commanded huge attention in the gaming mainstream. Then, lamentably, after the *Citizen Kane*-like achievement that was Grim Fandango (IMHO), the genre disappeared. Well, if you're nostalgic for those adventures of yore, then the good news is that A Vampyre Story is an unabashed recreation of the LucasArts canon — right down to the fact that it has been created by Bill Tiller, a former LucasArts staffer who worked on The Curse of Monkey Island (amongst others). The whole game screams 'Guybrush Threepwood' (if you know what I mean) and offers exactly the same kind of inane 'use object A with character B' puzzle-solving, while introducing a decidedly Tim Burton-esque art style and plot which sees you questing as the mixed-up Mona (your typical Draxsylvanian vampire-in-denial) and her batty pal, Froderick. Lots of fun.

Comic relief, anyone?

AVAILABLE PLATFORMS: **PC-DVD** | Wii | PS3 | PSP | XBOX 360 | DS

CONTACT QV Software
ONLINE www.qvsoftware.com.au
PRICE $69.95

✔ Familiar; funny; old-school adventure gaming.

✖ Not quite the same level of polish as the old classics.

VERDICT ★★★½☆

Resistance: Retribution

Christopher Zammit kills some Chimera on the go.

Set between Resistance: Fall of Man and Resistance 2, Retribution jumps the English Channel into France where you get to take on the Chimera as James Grayson, a former British Marine who is set on destroying every conversion centre he can find in order to avenge the death of his brother. With the great gameplay you've come to expect from this franchise, the PSP does surprisingly well as a platform for this scaled down first-person shooter. The controls are good, even though the targeting of the bad guys is a little over-simplified with the PSP's help. The only minor drawback with Retribution, compared to its PS3 brothers: its character renderings look a little simplified and stiff. The Chimera walk around with only one facial expression, which makes them look like they are constantly yawning. That aside, Retribution is a worthy addition to the series with eight-player multiplayer gameplay as well as Deathmatch, Capture the Flag, Containment and Assimilation modes that provide as much variety as you could want. Once you get used to the controls, you'll find it hard to put this one down.

AVAILABLE PLATFORMS: PC-DVD | Wii | PS3 | **PSP** | XBOX 360 | DS

CONTACT Sony Australia
ONLINE au.playstation.com/
PRICE $49.95

✔ Great gameplay; great multiplayer modes.

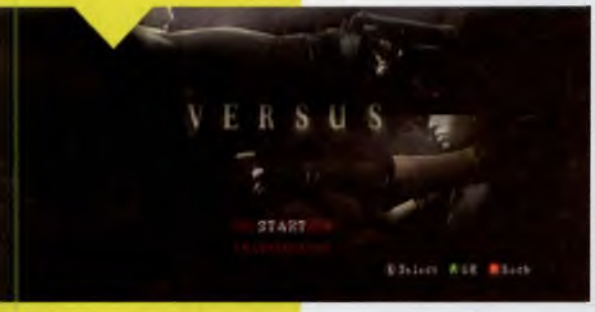
✖ Simplified graphics feel dated after playing the PS3 versions.

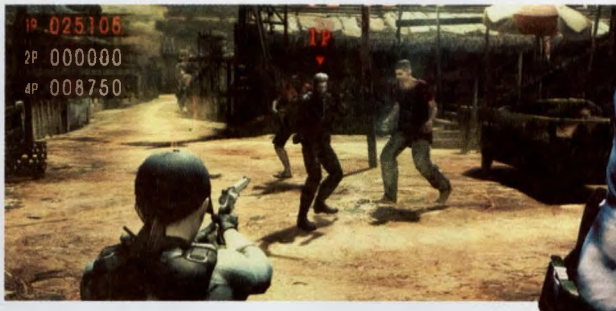
VERDICT ★★★★☆

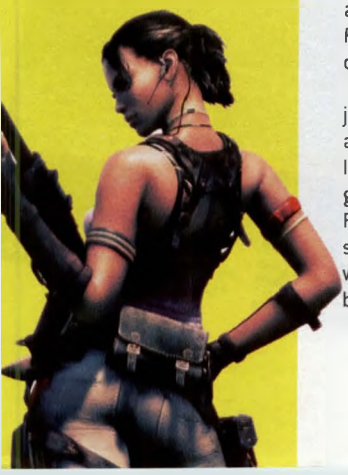
Indepth
Share the fun

A new and very welcome addition to Resident Evil is a two-player co-operative mode played online via Live or offline using the old-school split screen. Your chosen plus-one takes on the role of Sheva and (hopefully) helps out a little more than AI-Sheva tends to. Co-op has been implemented superbly, with various points in the game relying on having a partner present. For example, there's a level deep within a mine, and one player takes a protection role while the other player carries a lantern — the sole light source — and lights the way forward. One simply can't function/succeed without the other and it's these kinds of shared problem-solving and eventual resolution that makes for a more memorable experience than simpler running-and-gunning co-op.

Unchained from their desks at long last, the *APC* staff grogilly sought refuge outside the office in the wintry sunlight...







Resident Evil 5

Even **Troy Coleman** can multi-task better than Chris Redfield.

The fifth full release (excluding Umbrella Chronicles, Evil Zeros and Veronicas) of Capcom's long-running survival horror series see players once again assume the role of Chris Redfield — trouble just seems to follow this guy around — as he and partner Sheva Alomar investigate a possible terrorist threat in deepest Africa. Shortly after arriving, the pair witness one of the locals being force-fed a parasite that ultimately turns him, and almost everyone else, into Majini (The Res 5 version of zombies), so Chris sets off to uncover what-the-hell-is going on.

Resident Evil has made a successful jump into next-gen land; the visual and sound effects are stunning. The landscapes are richly detailed, feel gritty (though somewhat reminiscent of FarCry 2) and help add to a heightened sense of exposure and solitude. On a whole, the game is fairly accessible and both new and old players shouldn't have any issues jumping right into the meat of the game. The control system is essentially the same as the previous releases with certain limitations retained (eg. Chris cannot move and fire at the same time), and while this worked in the previous game model (ie. stopping and steadying to shoot builds suspense), it just doesn't work well with the expanded environments and horde mentality of the creatures in 5. Add to this an unwieldy and simply irritating inventory management system and, instead of building suspense, Res 5 loses gameplay fluidity, which rapidly devolves into deep-seated frustration.

For all its awkwardness, Res 5 is still worthy of a spin around the console, if only for the sake of series completion. And if schedules are strictly kept, come spring we'll get to see if anything has been improved for the PC.

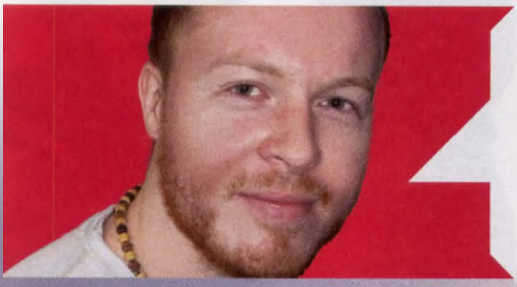
AVAILABLE PLATFORMS
PC-DVD | Wii | PS 3 | XBOX 360

CONTACT Capcom
ONLINE www.residentevil.com/5
PRICE $119.95

✔ Great-looking environments.

✖ Horrible inventory; even worse controls.

VERDICT ★★★½☆



chipchat

BY PETER DOCKRILL

Who registers the registrars?

If you're a regular reader of Chip Chat, you're likely to be familiar with our fascination with the geekdom-enabling powers of the internet: put simply, if you're a card-carrying stamp-collecting tea-drinking badge-collecting chip-on-shoulder-bearing fanboy of *some* description, clan or niche, then chances are the internet is somehow, *somewhere* supporting, promoting or coordinating your interest/hobby/alternative lifestyle. Case in point: the World Super Hero Registry (**www.worldsuperheroregistry.com**). If you are, as unlikely as it might seem/as it so happens/in actual (if non-quantifiable) fact...*a super hero* (in your spare time, or even in your main time), there is now a web site for you, where you can register this information and display your creed, costume and cape (or not) to the world at large.

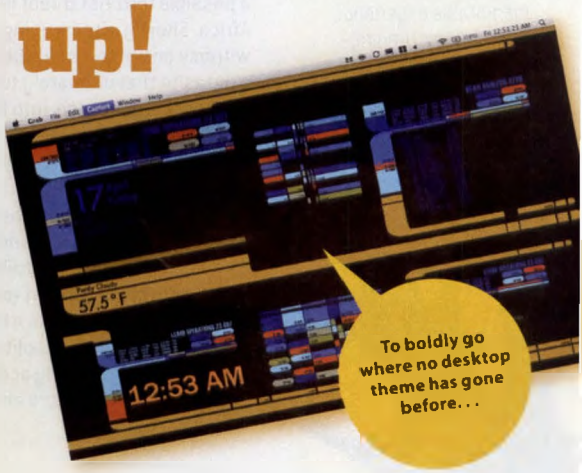
And about time.

iDocumentary

Picking up on last month's bionic man theme (see *APC* June, page 118), where we covered the strange story of a Finnish software developer who fitted himself out with a prosthetic USB replacement finger, comes the peculiar predicament of Canadian Robert Spence (*http://eyeborg.blogspot.com/*), who, after losing his eye, decided to "modify [his] prosthetic eye into a video camera". As Spence, who is a documentary filmmaker, himself says, "I will use the eye-cam the same way I use a video camera now... I am in development on a documentary about how video and humanity intersect, especially with regards to surveillance."

Theme me up!

Due to the success and overall quality of the new J.J. Abrams-directed *Star Trek* flick, it appears Trekkies — a long (and unfairly) maligned subculture — are finally back in favour with the mainstream flock. So what better time to break out your favourite Trek-inspired PC wallpaper and file icon themes? As covered on Lifehacker.com (**http://tinyurl.com/cbc2kk**), this is one user's customised Mac wallpaper, featuring all sorts of useful real-time system stats, calendar and local media info, all lovingly rendered in a boldly exploratory USS Enterprise bridge style (circa Picard '87). Adorn your PCs people! abc



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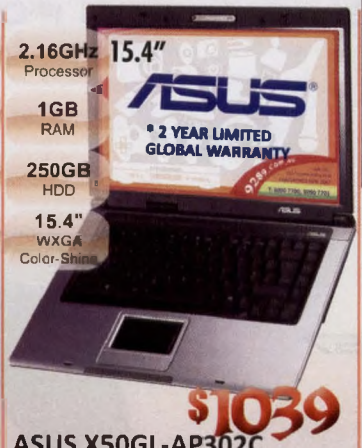

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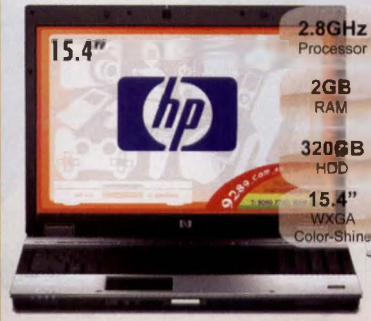

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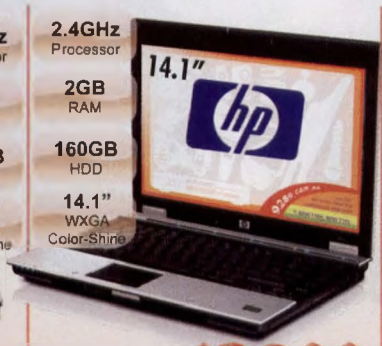

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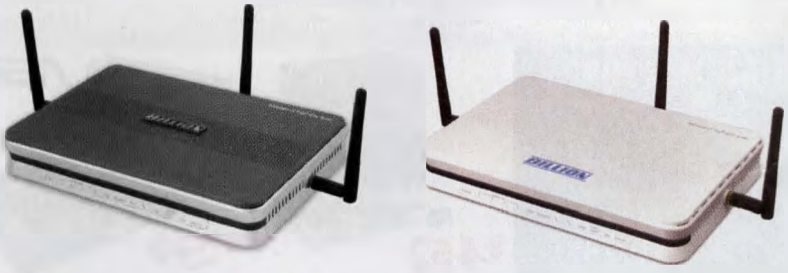

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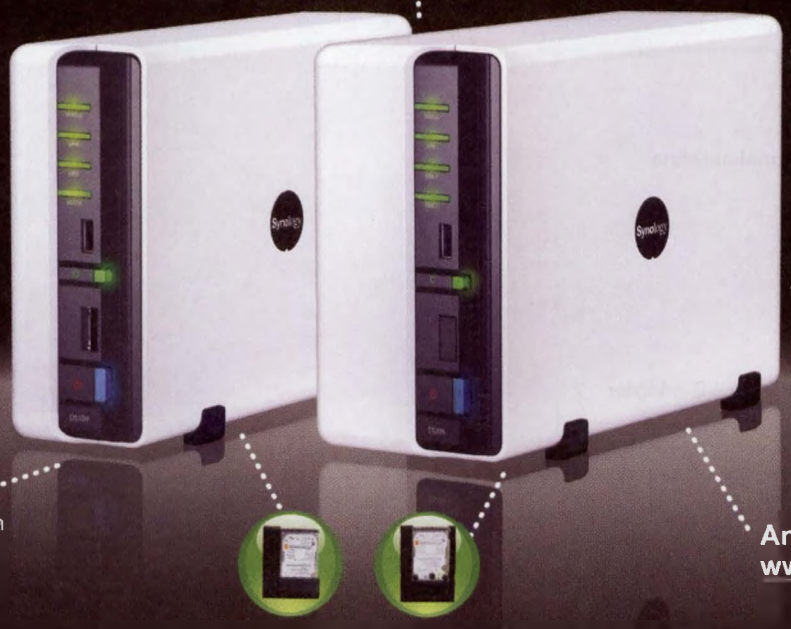

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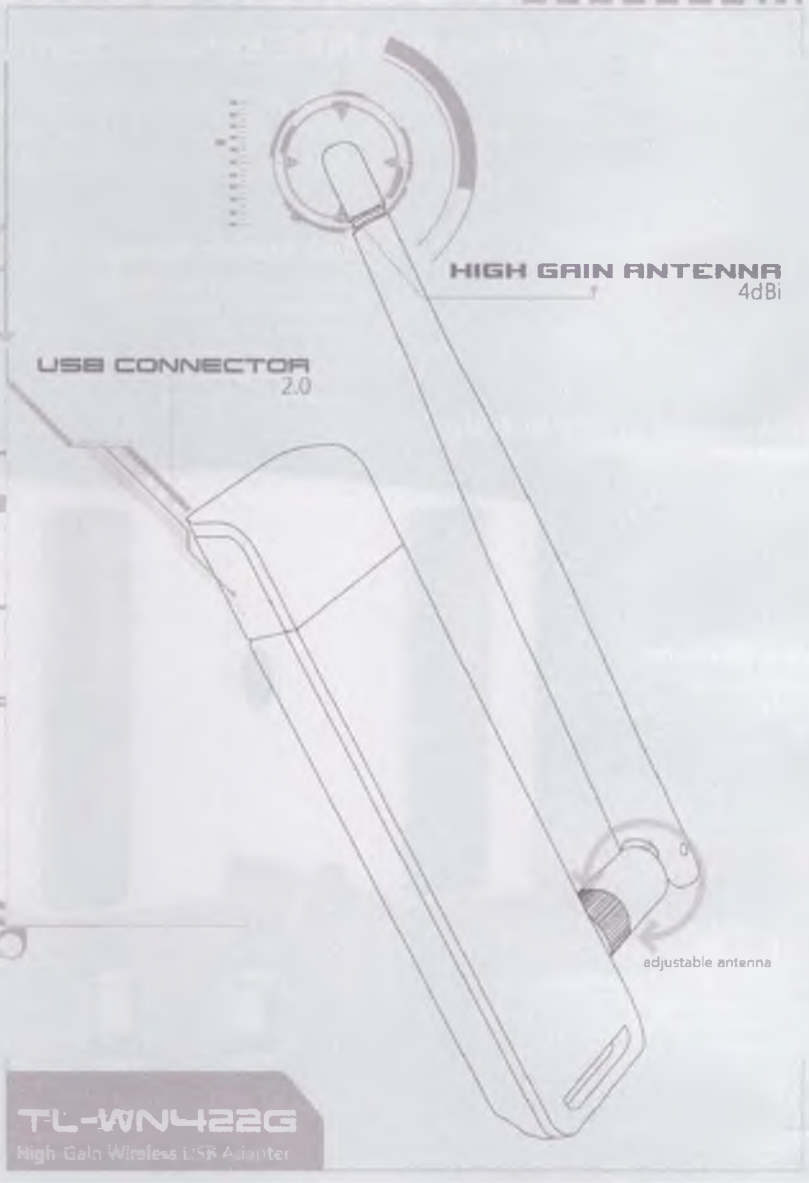

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CRU3 is designed to connect to any PABX, COMMANDER, PSTN or VOIP handset. Will then provide High Quality telephone call recording to your PC (PC software provided). Automatic operation with start/stop activation from your PC.

PROFESSIONAL model

CRU4 provides all facilities of the CRU3 Model (it connects to any handset) and in addition allows message(s), or previous recordings to be played back to the other party at any time. Allows notes to be tagged to the recording file.

AUTO DIGITAL ANNOUNCEMENT

Our AUTOMATIC ANNOUNCEMENT DEVICE Answer your Incoming telephone calls, play announcement and then resume ringing of your telephones. Ideal for announcing change of number or that the call will be recorded.

TELEPHONE LINE DOOR STATION SOLUTION

DOOR STATION UNIT

DS2 will RING all of your telephones when a visitor arrives at your front door or gate. Answer to communicate. Open the door or gate with touch tones O ordinary single line or multi-line phone sy surface mount or flush mount door phone

PABX DOOR STATION UNIT

DS4 is designed to be connected to an analogue extension of any PABX. Commander or other multi line telephone system. DS4 goes "off hook" when activated by the door phone. Requires surface mount or flush mount door phone.

DOOR STATION DIAL OUT

Our New DS6 model will RING your telephones and then DIAL OUT to a pre-programmed telephone number if a visitor arrives and you are not home. Requires Surface Mount or Flush Mount Door Phone. Can also connect to a PABX extension.

DOOR PHONES

A range of door phones are available

SHARE YOUR LINES AND SAVE INSTALLATION & RENTAL CHARGES

FAXSTREAM DUET SWITCHES

Will allow your Fax or Modem device to operate with the Telstra FaxStream Duet service.

Provides fully automatic fax reception, just like having a separate line. Two models are available.

INTELLIGENT FAXSWITCH

FAX SWITCH will allow your existing Fax Device to connect to a Single Telephone line or a Multi Line (PABX) phone system, to provide for FULLY AUTOMATIC Fax operation. Will operate with all existing telephones and also an Answering machine.

INTELLIGENT MODEMSWITCH

MODEM SWITCH allows your existing Data Modem Device to connect to any Single Telephone Line, Fax Line or a Multi Line (PABX) phone system, to provide for FULLY AUTOMATIC Dial In & Dial Out Modem Data operation. Models available that allow up to 8 devices on 1 line.

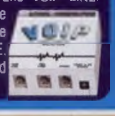
EFTPOS SWITCH

EFTPOS switch will allow your existing EFTPOS device to sha any existing Single Telephone Line, Fax Line or a Multi Line (PABX) phone system. Provides automatic connection on dialing. BARGE-IN protection prevents interference when line is in use. Alternative model will allow operation on 2 lines.

MISCELLANEOUS TELEPHONE LINE APPLICATION

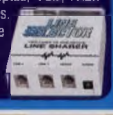
VOIP SELECTOR

This device will allow you to connect one or more telephones to your TELEPHONE LINE and VOIP LINE. Incoming calls from either line ring on the connected telephone(s). Outgoing calls are automatically DEFAULTED to ONE LINE, but the alternative line can be selected by DTMF code.



TWO LINE SELECTOR

Premium device will allow you to connect one Telephone Device to two Telephone lines (Telstra, Optus, VOIP, PABX etc). Ideal for EFTPOS, Cordless Phones, Modems etc. Additional features are provided, including automatic (or manual) selection of an alternative line if the default line is busy.



TELEPHONE CALL TRANSFER

Easy-Transfer will allow you to answer a call on one telephone and then TRANSFER the call to another telephone fitted to the same line. Also provides INTERCOM facility. Uses your existing telephones.

MULTIPLE NUMBER SWITCH

Operate Two numbers on one line. This device will conne your Multiple number calls to one set of phones or answering machine and your Normal number calls to another set of phones or answering machine.

TELEPHONE LINE ON HOLD SOLUTIONS

DIGITAL ON HOLD

DMC Australia's Leading On Hold player, is an MP3 based Message On Hold Device, designed to provide the High Quality and High Reliability that is necessary for all telephone On Hold applications. Easy message change provided by replacing memory card.

ELECTRONIC MESSAGE UPDATE

DMS is available with range of optional Automatic electronic message update methods including Email, Modem, FTP and Network IP. We have a National Network of Dealers ready to produce your customized message.

SINGLE LINE ON HOLD

Just plug our MOH Line Sharer into any socket on your single telephone line, connect any audio source (Radio, PC or DMC) and you now have a professional telephone line On Hold facility for your existing telephones.

AUTOMATIC CALL ATTENDANT

Our single line CALL ATTENDANT will answer yo incoming calls after a preset number of rings, pl a greeting & then put your call on hold until you are able to answer. Also provides Message on Hold facility for your single line.

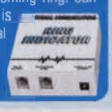
MORE MISCELLANEOUS EQUIPMEN

TELEPHONE LINE SIMULATOR

This TELEPHONE LINE SIMULATOR can be used for testing, programming & demonstration of analogue telecommunications equipment, without the need to use a telephone line and generating costly calls. 4 Models are available.

RING INDICATOR

This device detects incoming calls and will close/open a relay to match the cadence of the incoming ring. Can also be set to close a relay until a call is answered. Ideal for control of external horns or lights to advise of an incoming telephone call.



REMOTE TELEPHONE ACTIVATOR

Call in to Switch ON. Switch OFF or RESET your PC, SERVER or any electrical device by telephone line using touch tone commands. RTA connects to any telephone line. Requires PCU accessory. 3 models are available.

POWER CONTROL UNIT

PCU connects direct to the RTA and also to your pow socket to allow telephone line dial in switching of the 240V supply connected to your equipment. Easy Plug In User Installation. Controls up to 10 Amps.

DIGITAL AUDIO EQUIPMENT

MESSAGE ON DEMAND

This can be programmed with up to 256 MP3 based messages stored on an MMC/SD card, which can be recalled and played by keypad entry or time programmed sequences.

BACKGROUND MUSIC SYSTEM

High Quality BMS holds up to 8GB of MP3 Music/Messages on a SD Flash Card. Plays Messages at user set intervals. Powerful internal amp will allow direct connection of up to 8 speakers. Line Level output is also provided. Has encryption facility.

TALKING DISPLAY UNIT

TDU will play 1 or more pre-recorded messages as soon it is triggered by a movement sensor, a switch or a preset time interval. Real for Product Promotions, Product Information Message Warnings etc.

MULTIPLE INPUT UNIT

MIU will allow for up to 12 separate movement sensors switches to be connected to the TDU. Each sensor trigge its own unique message. output via any 8 ohm unpowered, powered or amplified speaker.

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P193

Motherboard Support	Up to Standard ATX
Expansion Slots	7
Drive Bays	4 x 5.25" Ext, 1 x 3.5" Ext, 6 x 3.5" Int
Cooling System	1 rear 120 mm x 25 mm exhaust TriCool™ fan 2 top 140 mm x 25 mm exhaust TriCool™ fan 1 side 200 mm fan for graphics cards
I / O ports	2 x USB 2.0 / 1 x eSATA / 1 x Audio Set (AC'97/HD)
Dimensions (mm)	514 mm (H) x 205 mm (W) x 590 mm (D)

P183

Motherboard Support	Up to Standard ATX
Expansion Slots	7
Drive Bays	4 x 5.25" Ext, 1 x 3.5" Ext, 6 x 3.5" Int
Cooling System	1 rear 120 mm x 25 mm TriCool™ fan 1 top 120 mm x 25 mm TriCool™ fan
I / O ports	2 x USB 2.0 / 1 x eSATA / 1 x Audio Set (AC'97/HD)
Dimensions (mm)	514 mm (H) x 205 mm (W) x 507 mm (D)

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- GUI based SES Management Tool
- Supports up to 96 HDD in daisy chain
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